



# FCC/IC Test Report

**FOR:**

**Model Name: P121UNA**

**FCC ID: O8F-PIXUW**

**IC ID: 3905A-PIXUW**

**47 CFR Part 15.247**

**IC RSS-210 Issue 7**

**TEST REPORT #: EMC\_PALMO\_070\_09001\_15.247\_BT**

**DATE: 2010-01-22**



**FCC listed  
A2LA Accredited**

**IC recognized #  
3462B**

**CETECOM Inc.**

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Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

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## 1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Parts 15.247 of Title 47 of the Code of Federal Regulations and Industry Canada Standards RSS 210 Issue 7.

| Company   | Description                                  | Model # |
|-----------|----------------------------------------------|---------|
| Palm, Inc | GSM/UMTS Phone with 802.11 b/g and Bluetooth | P121UNA |

### Responsible for Testing Laboratory:

| 2010-01-22 | Compliance | Marc Douat<br>(Test Lab Manager) |           |
|------------|------------|----------------------------------|-----------|
| Date       | Section    | Name                             | Signature |

### Responsible for the Report:

| 2010-01-22 | Compliance | Josie Sabado<br>(Project Engineer) |           |
|------------|------------|------------------------------------|-----------|
| Date       | Section    | Name                               | Signature |

The test results of this test report relate exclusively to the test item specified in Section 3.  
CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.



## **2 Administrative Data**

### **2.1 Identification of the Testing Laboratory Issuing the EMC Test Report**

|                                      |                                                        |
|--------------------------------------|--------------------------------------------------------|
| <b>Company Name:</b>                 | CETECOM Inc.                                           |
| <b>Department:</b>                   | Compliance                                             |
| <b>Address:</b>                      | 411 Dixon Landing Road<br>Milpitas, CA 95035<br>U.S.A. |
| <b>Telephone:</b>                    | +1 (408) 586 6200                                      |
| <b>Fax:</b>                          | +1 (408) 586 6299                                      |
| <b>Responsible Test Lab Manager:</b> | Heiko Strehlow                                         |
| <b>Responsible Project Leader:</b>   | Josie Sabado                                           |

### **2.2 Identification of the Client**

|                          |                          |
|--------------------------|--------------------------|
| <b>Applicant's Name:</b> | Palm, Inc.               |
| <b>Street Address:</b>   | 950 W. Maude Ave         |
| <b>City/Zip Code</b>     | Sunnyvale, CA 94085-2801 |
| <b>Country</b>           | USA                      |
| <b>Contact Person:</b>   | Julia Luke               |
| <b>Phone No.</b>         | (408) 617-8597           |
| <b>e-mail:</b>           | Julia.Luke@palm.com      |

### **2.3 Identification of the Manufacturer**

Same as above client.

### 3 Equipment under Test (EUT)

#### 3.1 Specification of the Equipment under Test

|                                  |                                                                                                                                                   |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Model No:</b>                 | P121UNA                                                                                                                                           |
| <b>Product Type:</b>             | GSM/UMTS Cellular Phone                                                                                                                           |
| <b>Hardware Revision :</b>       | DVT2B                                                                                                                                             |
| <b>Software Revision :</b>       | Utility Software Build: 920                                                                                                                       |
| <b>FCC-ID:</b>                   | O8F-PIXUW                                                                                                                                         |
| <b>IC-ID :</b>                   | 3905A-PIXUW                                                                                                                                       |
| <b>Frequency:</b>                | 2400-2483.5 MHz                                                                                                                                   |
| <b>Type(s) of Modulation:</b>    | GFSK, $\pi/4$ DQPSK, 8- DPSK                                                                                                                      |
| <b>Number of channels:</b>       | 79                                                                                                                                                |
| <b>Antenna Type:</b>             | Integral                                                                                                                                          |
| <b>Equipment Classification:</b> | <input type="checkbox"/> Fixed <input type="checkbox"/> Vehicular <input checked="" type="checkbox"/> Portable<br><input type="checkbox"/> Module |

### 3.2 Identification of the Equipment Under Test (EUT)

| EUT # | Serial Number | HW Version | SW Version                     | Comments         |
|-------|---------------|------------|--------------------------------|------------------|
| 1     | PD2BNBN98101  | DVT2B      | Utility Software<br>Build: 920 | Radiated sample  |
| 2     | PD2BNBR98112  | DVT2B      | Utility Software<br>Build: 920 | Conducted sample |

### 3.3 Identification of Accessory equipment

| AE # | Type                    | Manufacturer | Model | Serial Number       | Part Number  |
|------|-------------------------|--------------|-------|---------------------|--------------|
| 1    | Battery                 | Palm         | N/A   | D298AW18D1BDC090810 | 157-10119-00 |
| 2    | Inductive Charging Dock | Palm         | N/A   | N/A                 | 157-10123-00 |
| 3    | Inductive Back Cover    | Palm         | N/A   | P29BJ0L4C4A         | 180-10763-00 |
| 4    | Headset                 | Palm         | N/A   | N/A                 | 180-10632-00 |
| 5    | AC Adapter #24          | Palm         | N/A   | 2B9840MTP2A         | 157-10124-00 |
| 6    | AC Adapter #30          | Palm         | N/A   | F298R03TP34         | 157-10130-00 |
| 7    | USB Cable               | Palm         | N/A   | N/A                 | 180-10646-00 |

#### **4 Subject Of Investigation**

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations and Industry Canada rules RSS-210 Issue 7.

This test report is to support a request for new equipment authorization under the FCC ID **O8F-PIXUW** and IC ID **3905A-PIXUW**

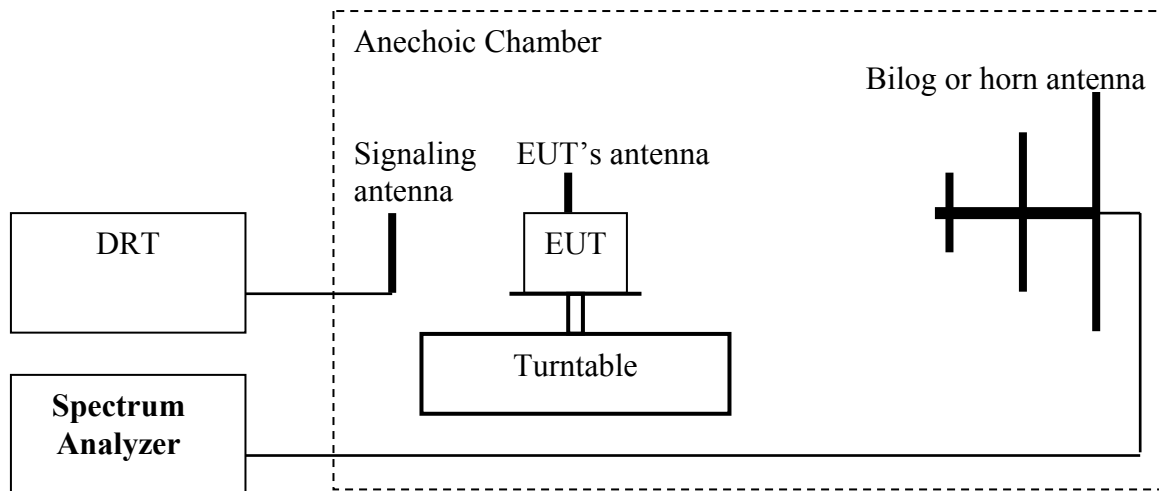
All testing was performed on the product referred to in Section 3 as EUT. This test report contains full radiated and conducted testing results as per FCC15.247.

During the testing process the EUT was tested on a single channel using DH5, 2DH5 or 3DH5 packets, all data in this report shows the worst case between horizontal and vertical polarization measurements.

## 5 Measurements

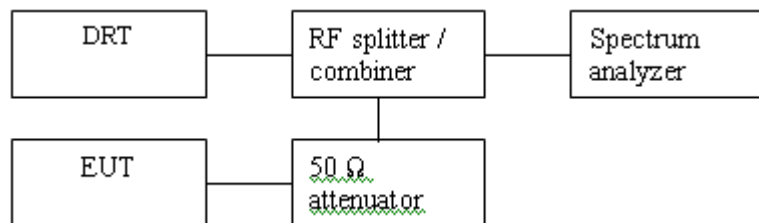
### 5.1 Radiated Measurement Procedure

Ref: TIA-603C 2004 -2.2.17.2 Effective Radiated Power (ERP) or Effective Isotropic Radiated Power (EIRP)



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a vertical orientation.
  2. Adjust the settings of the Digital RadioCommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
  3. Set the spectrum analyzer to the channel frequency. Set the analyzer to measure peak hold with the required settings.
  4. Rotate the EUT 360°. Record the peak level in dBm (**LVL**).
  5. Replace the EUT with a vertically polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
  6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS**). **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
  7. Determine the ERP using the following equation:  
**ERP (dBm) = LVL (dBm) + LOSS (dB)**
  8. Determine the EIRP using the following equation:  
**EIRP (dBm) = ERP (dBm) + 2.14 (dB)**
  9. Measurements are to be performed with the EUT set to the low, middle and high channels.
- Spectrum analyzer settings: RBW=VBW=3MHz**

## 5.2 Conducted Measurement Procedure



1. Connect the equipment as shown in the above diagram.
2. Adjust the settings of the Digital RadioCommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Measurements are to be performed with the EUT set to the low, middle and high channels.

### 5.3 Maximum Peak Output Power

#### 5.3.1 Limits: §15.247 (b)(1)

Nominal Peak Output Power < 30 dBm (1W)

#### 5.3.2 Test Conditions:

Tnom: 23°C; Vnom: 3.7 V

#### 5.3.3 Test Result:

| Max Peak Output Power- Radiated (dBm) |                 |       |        |
|---------------------------------------|-----------------|-------|--------|
| Modulation                            | Frequency (MHz) |       |        |
|                                       | 2402            | 2442  | 2480   |
| <b>GFSK</b>                           | 1.446           | 1.068 | -0.449 |
| <b><math>\pi/4</math> DQPSK</b>       | 0.956           | 0.062 | -1.897 |
| <b>8-DPSK</b>                         | 1.446           | 0.137 | -2.087 |
| Measurement Uncertainty: $\pm 3$ dB   |                 |       |        |

| Max Peak Output Power- Conducted (dBm) |                 |      |       |
|----------------------------------------|-----------------|------|-------|
| Modulation                             | Frequency (MHz) |      |       |
|                                        | 2402            | 2442 | 2480  |
| <b>GFSK</b>                            | 1.46            | 1.35 | 0.62  |
| <b><math>\pi/4</math> DQPSK</b>        | 1.29            | 0.86 | -0.10 |
| <b>8-DPSK</b>                          | 1.58            | 1.21 | 0.21  |
| Measurement Uncertainty: $\pm 0.5$ dB  |                 |      |       |

### 5.3.4 Test Data/plots:

#### Radiated Peak Power GFSK 2402 MHz

CH1

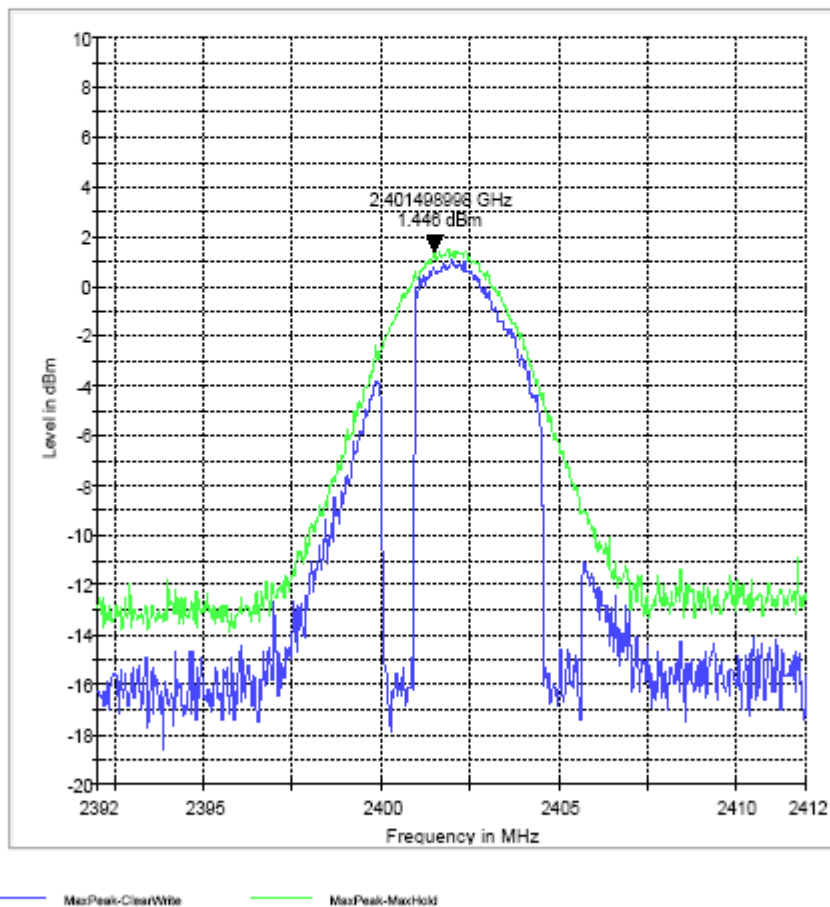
1 / 1

## EMC32 Report

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (FCC 15.247 Sample)  
Configuration: Standard Cover and AC adapter #30  
Comment: Ant H 138.9cm; TT 214.9; EUT H

EIRP BT L



**Radiated Peak Power GFSK 2441 MHz**

CH2

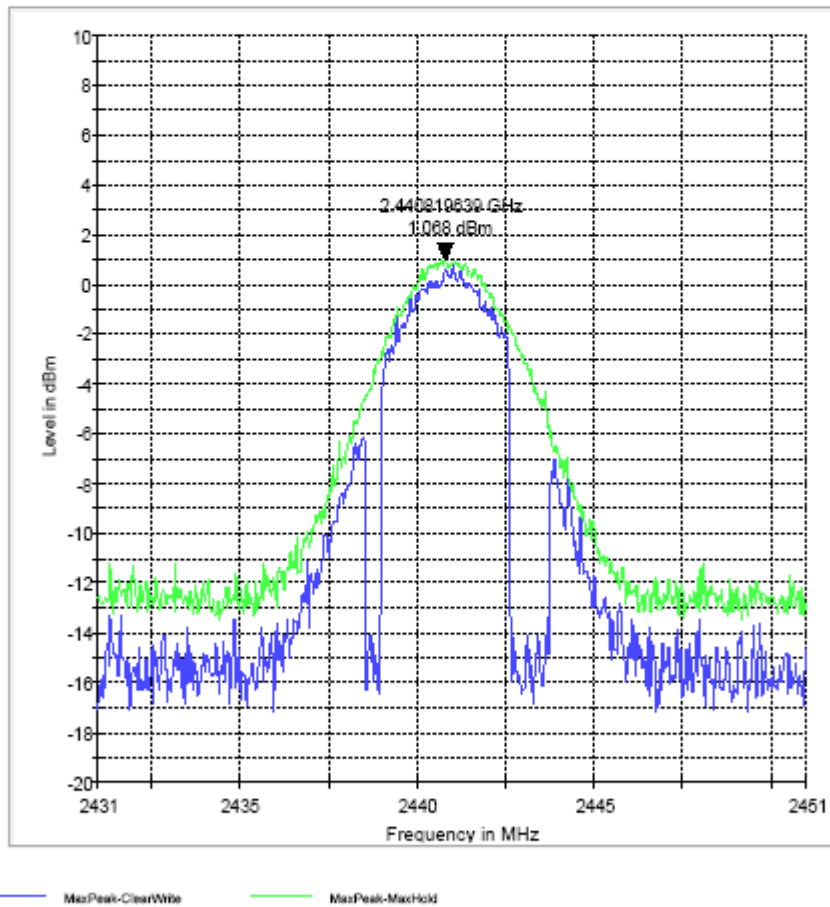
1 / 1

**EMC32 Report**

**EUT Information**

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (FCC 15.247 Sample)  
Configuration: Standard Cover and AC adapter #30  
Comment: Ant H 138.9cm; TT 214.9; EUT H

EIRP BT M



**Radiated Peak Power GFSK 2480 MHz**

CH3

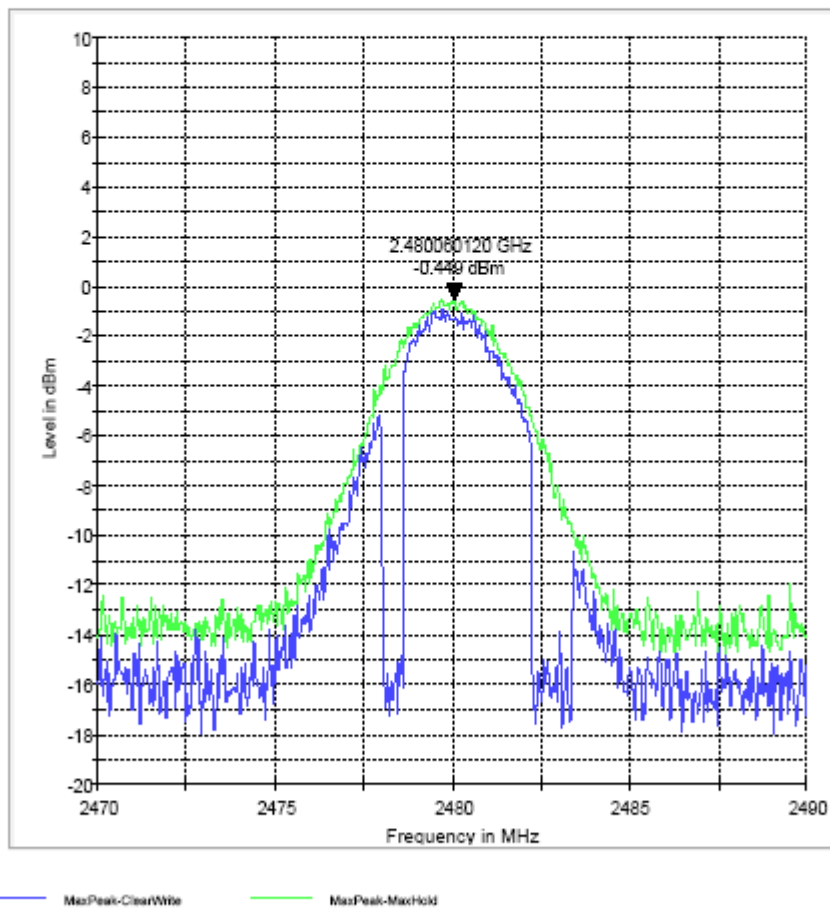
1 / 1

**EMC32 Report**

**EUT Information**

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (FCC 15.247 Sample)  
Configuration: Standard Cover and AC adapter #30  
Comment: Ant H 138.9cm; TT 214.9; EUT H

EIRP BT H



**Radiated Peak Power  $\pi$  / 4 DQPSK 2402 MHz**

CH1

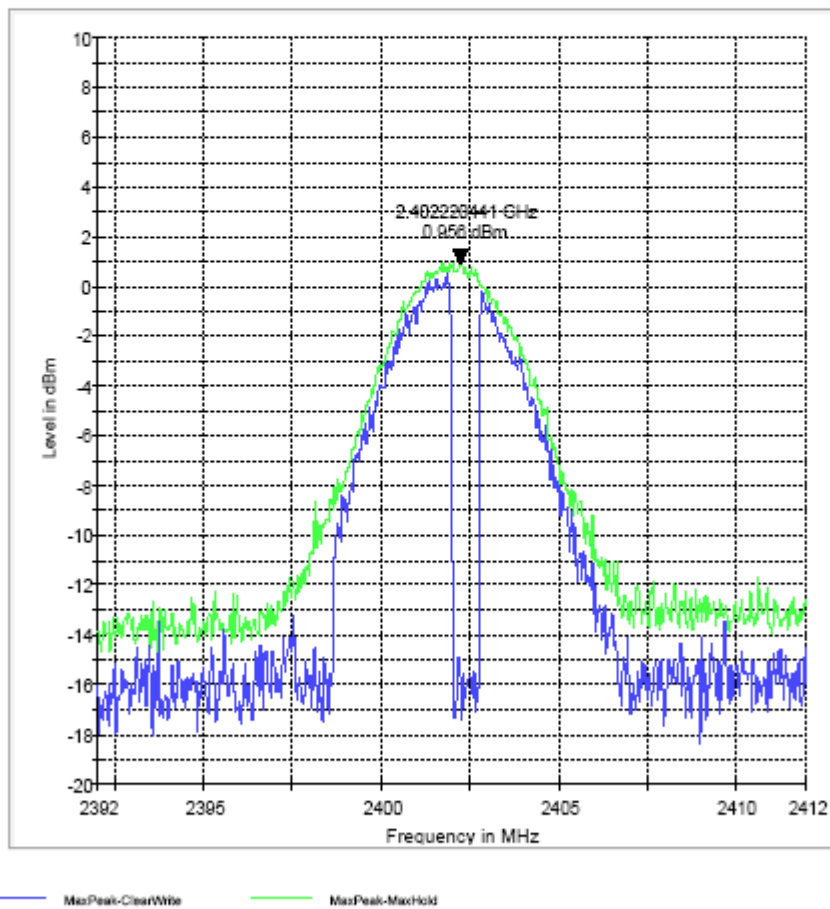
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## EMC32 Report

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (FCC 15.247 Sample)  
Configuration: Standard Cover and AC adapter #30  
Comment: Ant H 138.9cm; TT 214.9; EUT H

EIRP BT L



**Radiated Peak Power  $\pi$  / 4 DQPSK 2441 MHz**

CH2

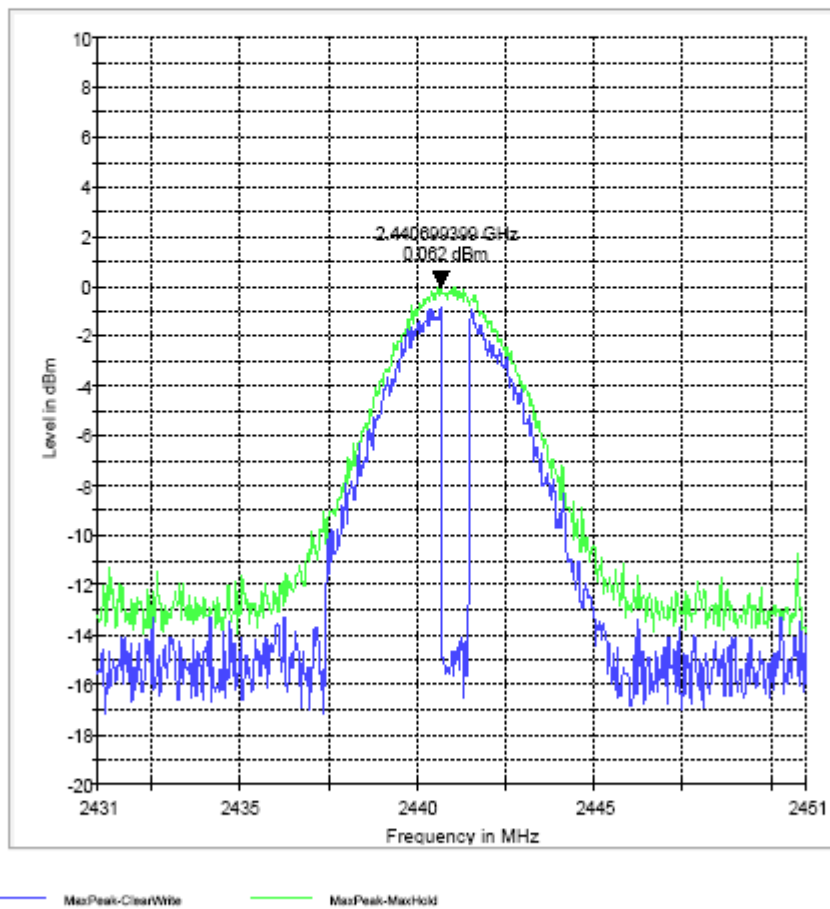
1 / 1

## EMC32 Report

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (FCC 15.247 Sample)  
Configuration: Standard Cover and AC adapter #30  
Comment: Ant H 138.9cm; TT 214.9; EUT H

EIRP BT M



**Radiated Peak Power  $\pi$  / 4 DQPSK 2480 MHz**

CH3

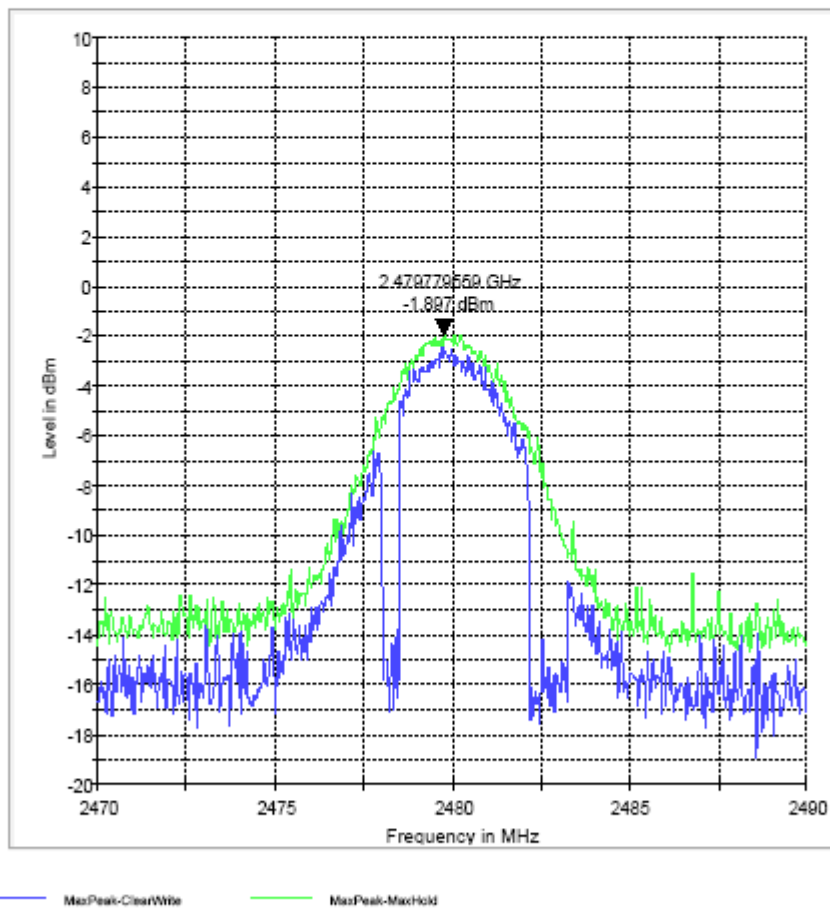
1 / 1

## EMC32 Report

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (FCC 15.247 Sample)  
Configuration: Standard Cover and AC adapter #30  
Comment: Ant H 138.9cm; TT 214.9; EUT H

EIRP BT H



**Radiated Peak Power 8DPSK 2402 MHz**

CH1

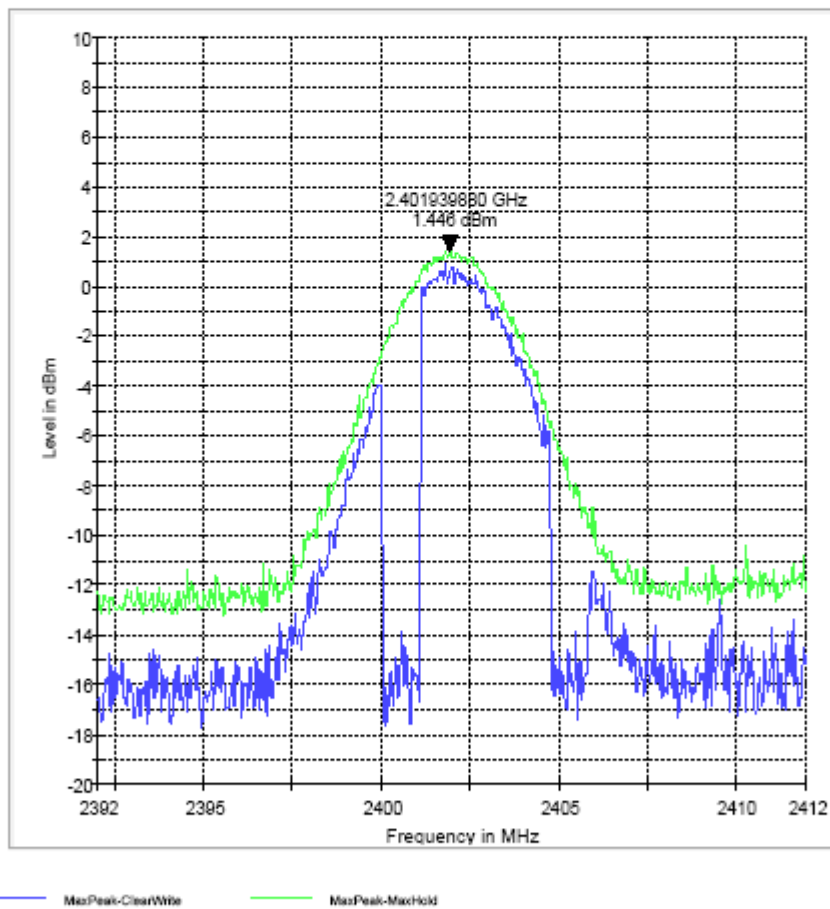
1 / 1

## EMC32 Report

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (FCC 15.247 Sample)  
Configuration: Standard Cover and AC adapter #30  
Comment: Ant H 138.9cm; TT 214.9; EUT H

EIRP BT L



**Radiated Peak Power 8DPSK 2441 MHz**

CH2

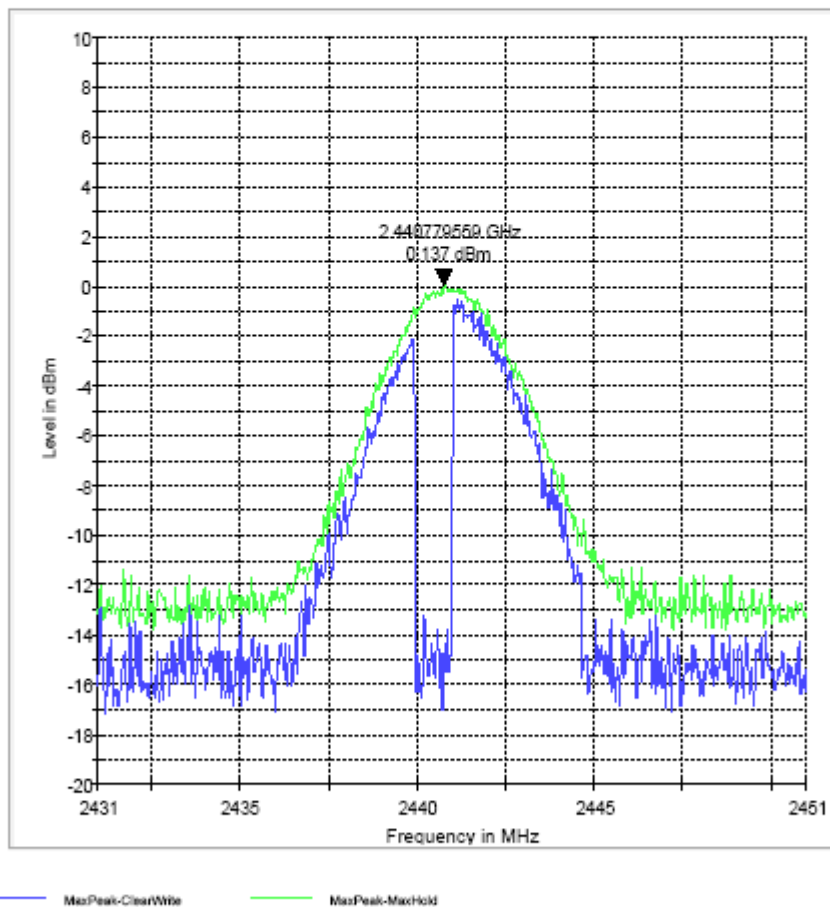
1 / 1

## EMC32 Report

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (FCC 15.247 Sample)  
Configuration: Standard Cover and AC adapter #30  
Comment: Ant H 138.9cm; TT 214.9; EUT H

EIRP BT M



**Radiated Peak Power 8DPSK 2480 MHz**

CH3

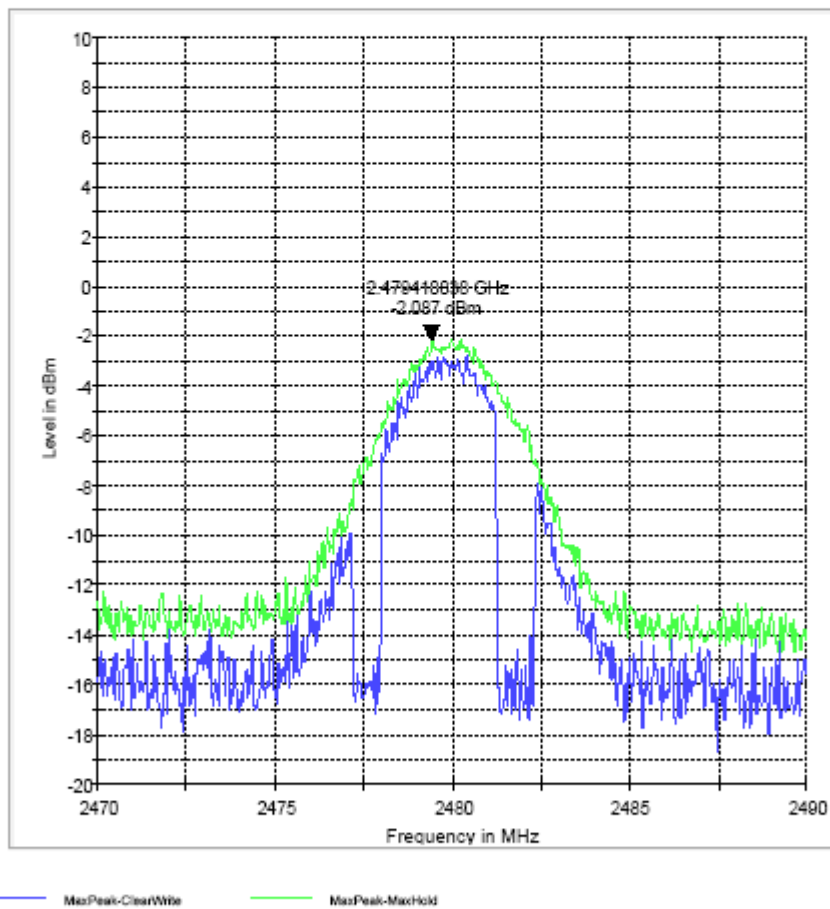
1 / 1

## EMC32 Report

### EUT Information

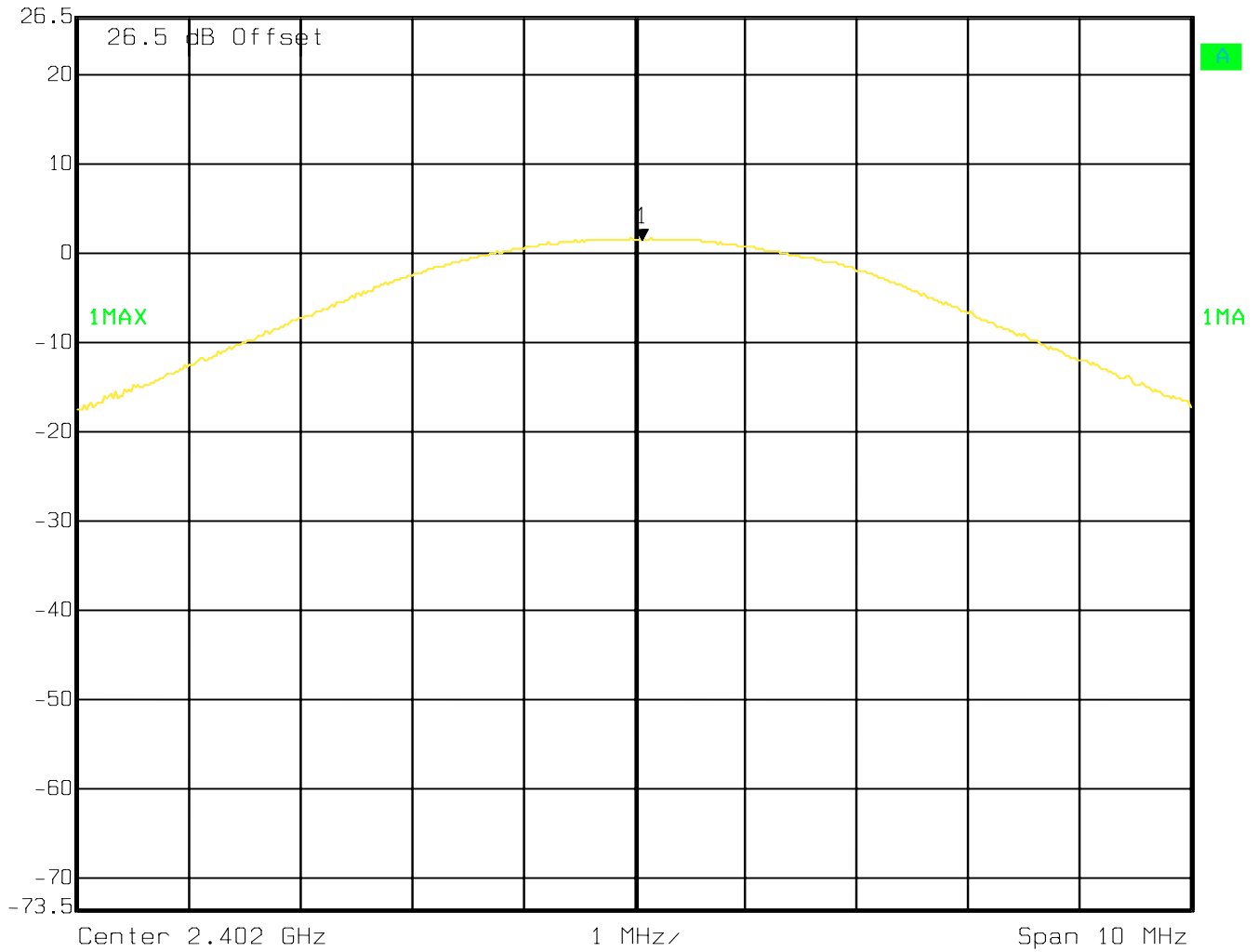
Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (FCC 15.247 Sample)  
Configuration: Standard Cover and AC adapter #30  
Comment: Ant H 138.9cm; TT 214.9; EUT H

EIRP BT H



**Conducted Peak Power GFSK 2402 MHz**

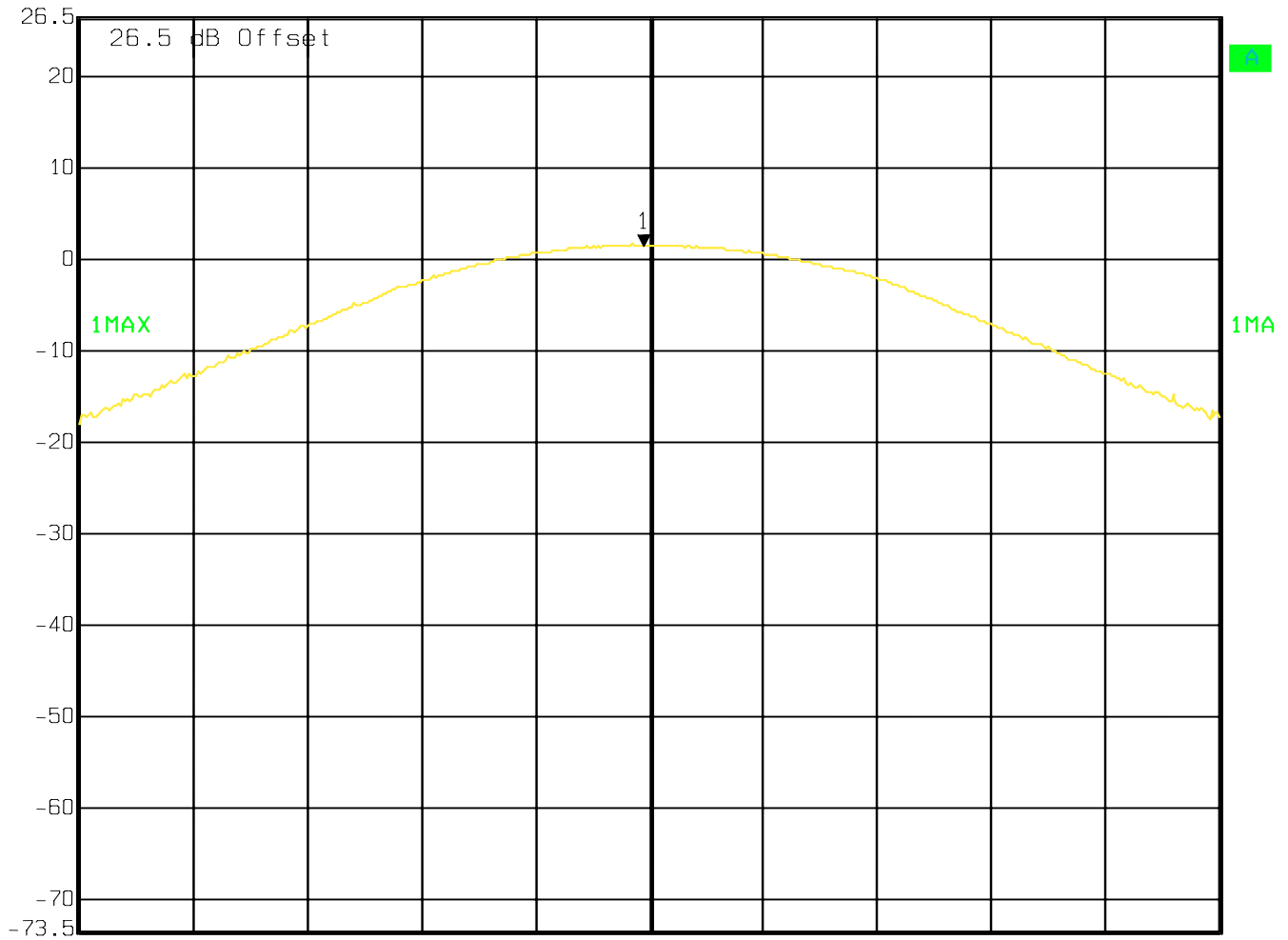

 Ref Lvl 26.5 dBm  
 Marker 1 [T1] 1.46 dBm  
 2.40207014 GHz  
 RBW 3 MHz RF Att 30 dB  
 VBW 3 MHz  
 SWT 5 ms Unit dBm



Date: 04.JAN.2010 09:56:38

**Conducted Peak Power GFSK 2441 MHz**


 Ref Lvl 26.5 dBm  
 Marker 1 [T1] 1.35 dBm  
 2.44094990 GHz  
 RBW 3 MHz RF Att 30 dB  
 VBW 3 MHz  
 SWT 5 ms Unit dBm

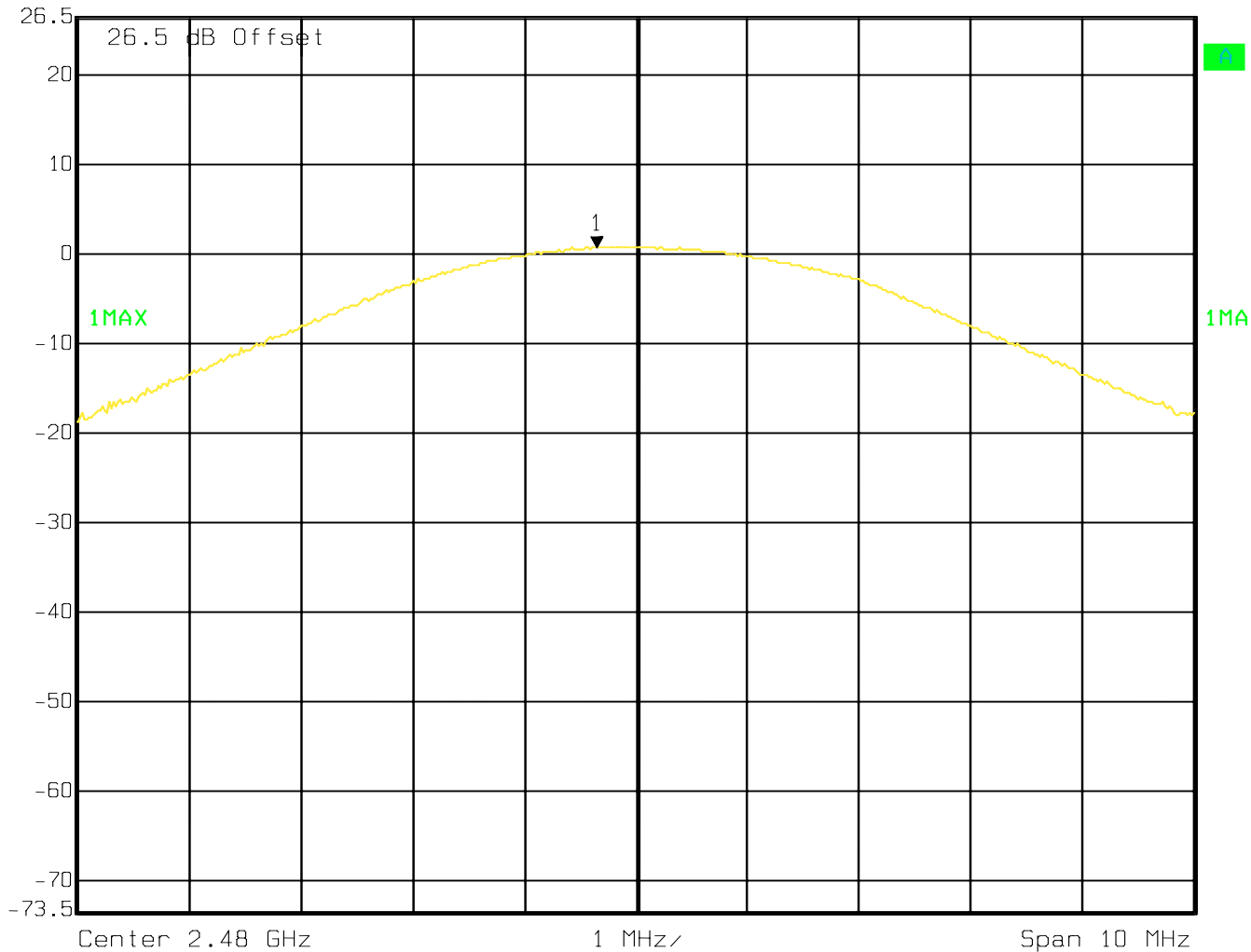


Center 2.441 GHz 1 MHz Span 10 MHz

Date: 04.JAN.2010 11:33:53

**Conducted Peak Power GFSK 2480 MHz**

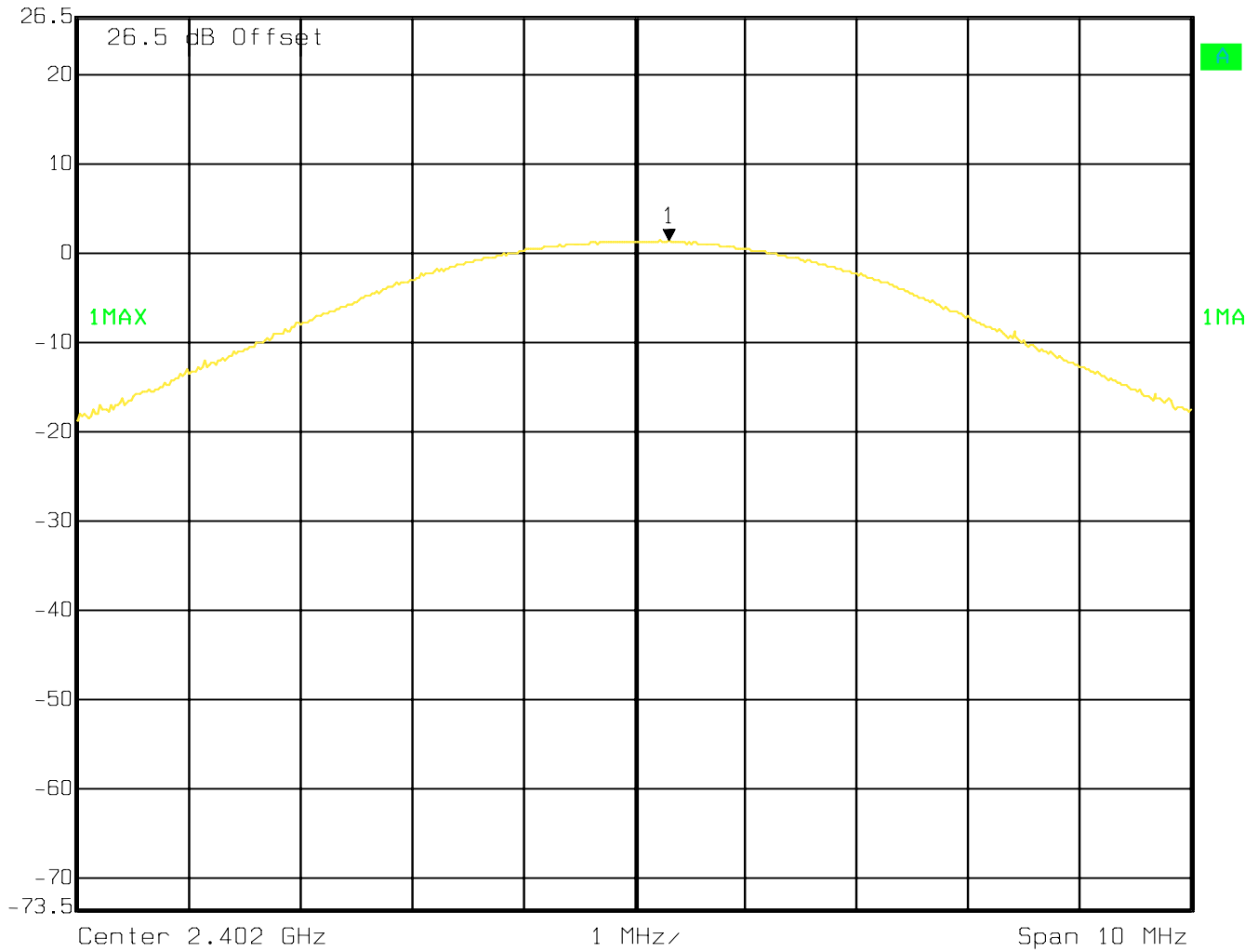

 Ref Lvl 26.5 dBm  
 Marker 1 [T1] 0.62 dBm  
 RBW 3 MHz RF Att 30 dB  
 VBW 3 MHz  
 2.47964930 GHz SWT 5 ms Unit dBm



Date: 04.JAN.2010 11:39:01

**Conducted Peak Power  $\pi / 4$  DQPSK 2402 MHz**

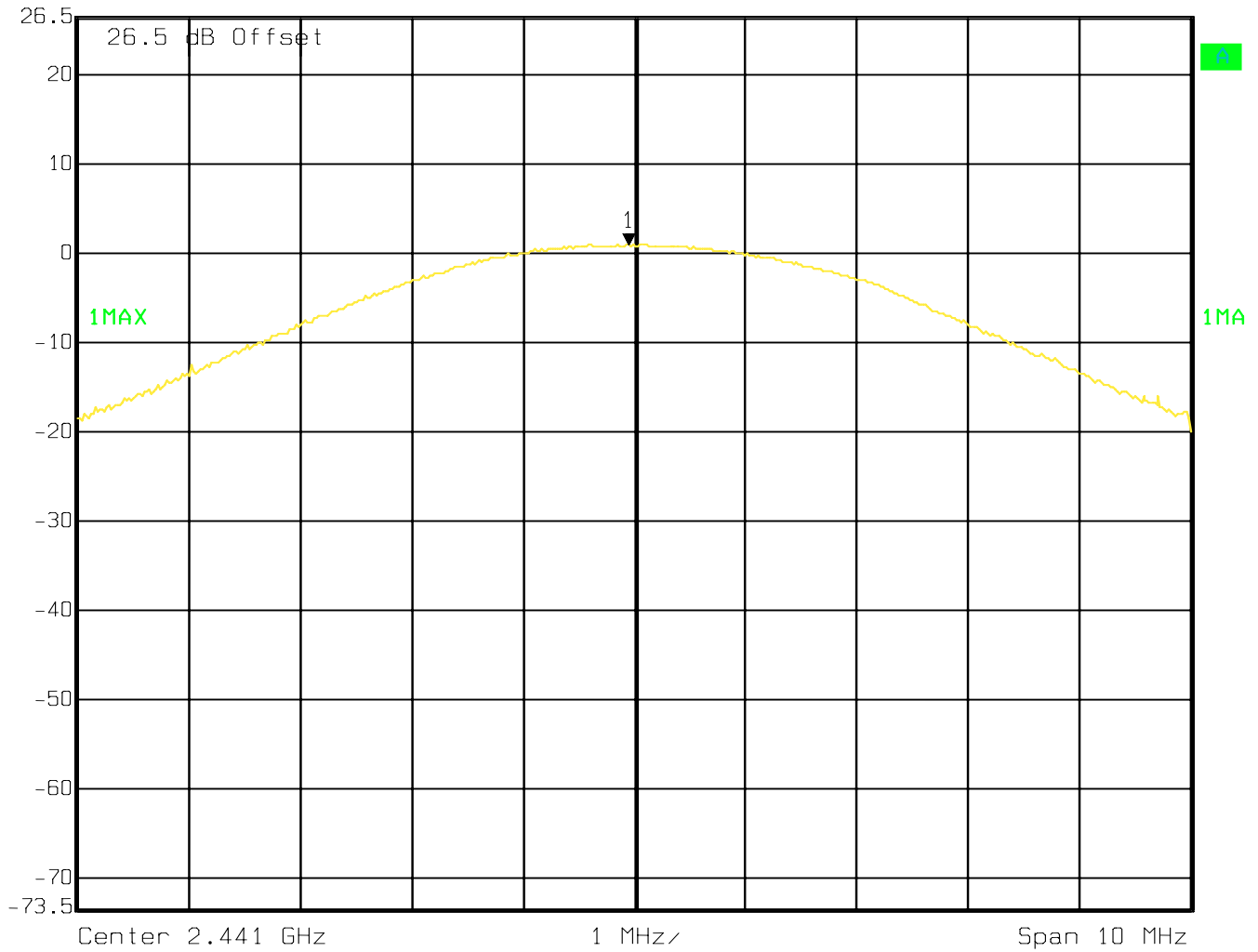

 Ref Lvl 26.5 dBm  
 Marker 1 [T1] 1.29 dBm  
 2.40231062 GHz  
 RBW 3 MHz RF Att 30 dB  
 VBW 3 MHz  
 SWT 5 ms Unit dBm



Date: 04.JAN.2010 11:43:18

**Conducted Peak Power  $\pi / 4$  DQPSK 2441 MHz**

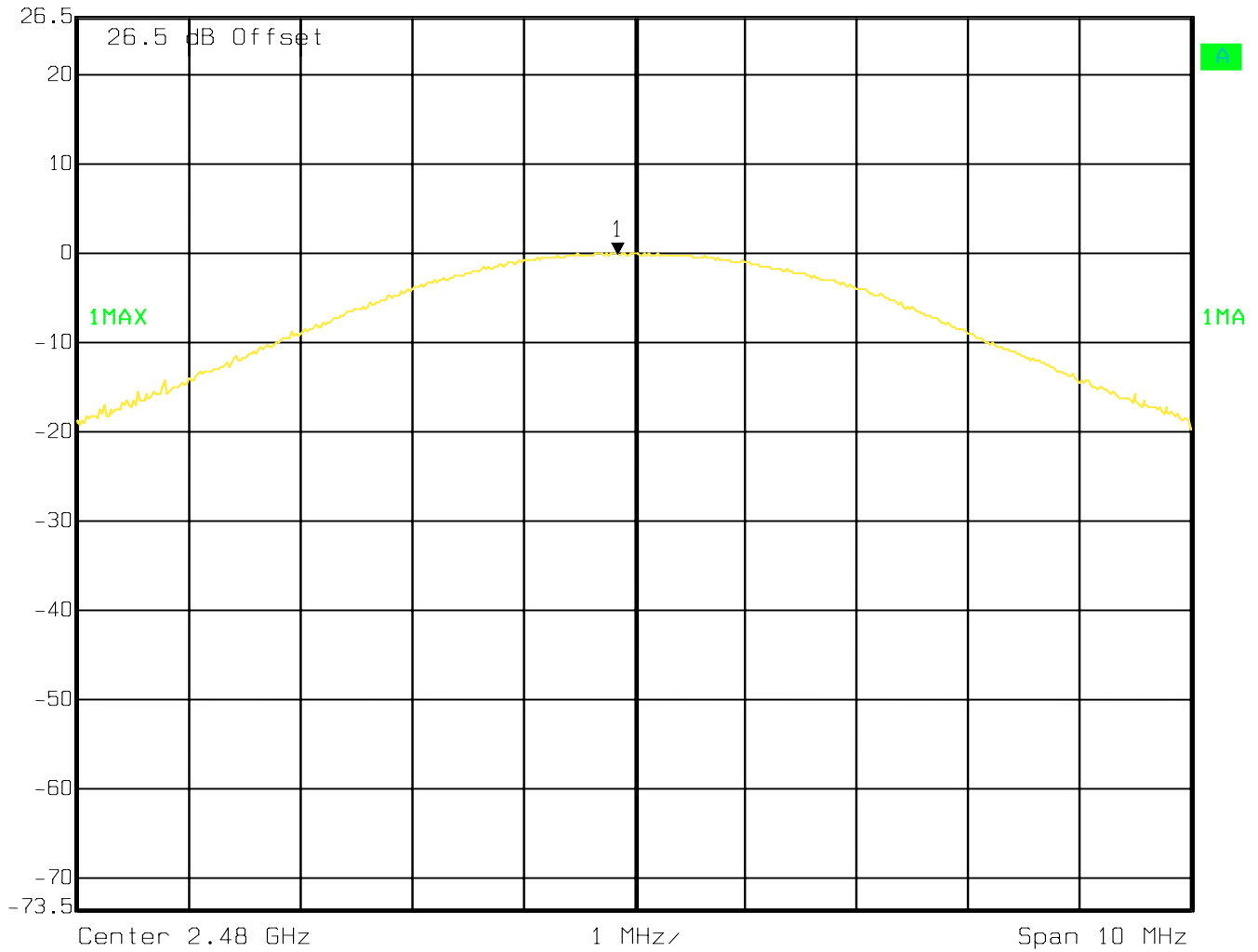

 Ref Lvl 26.5 dBm  
 Marker 1 [T1] 0.86 dBm  
 2.44094990 GHz  
 RBW 3 MHz RF Att 30 dB  
 VBW 3 MHz  
 SWT 5 ms Unit dBm



Date: 04.JAN.2010 11:42:08

**Conducted Peak Power  $\pi / 4$  DQPSK 2480 MHz**

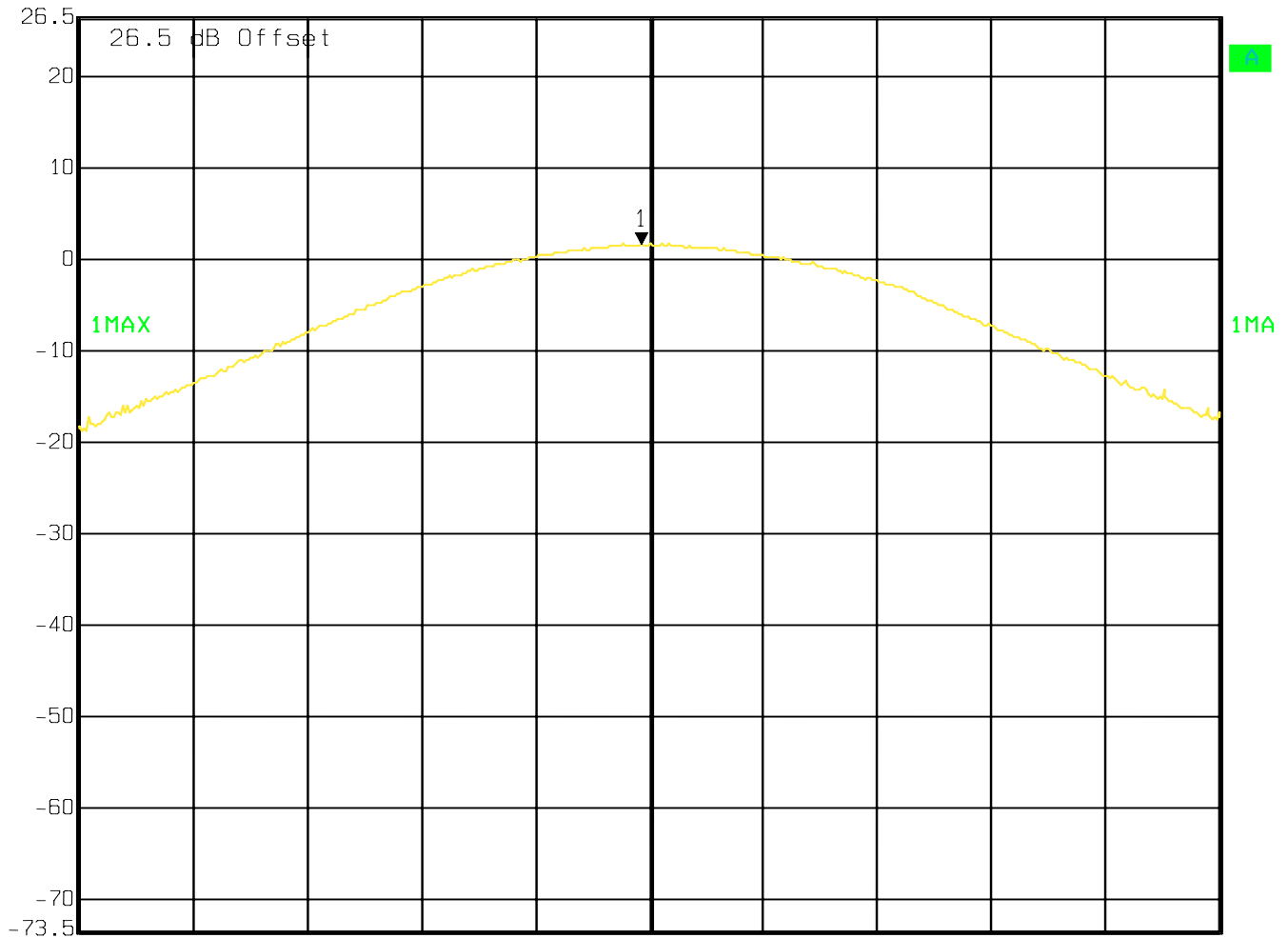
 Ref Lvl 26.5 dBm  
 Marker 1 [T1] -0.10 dBm  
 2.47984970 GHz  
 RBW 3 MHz RF Att 30 dB  
 VBW 3 MHz  
 SWT 5 ms Unit dBm



Date: 04.JAN.2010 11:40:54

**Conducted Peak Power 8DPSK 2402 MHz**

 Ref Lvl 26.5 dBm Marker 1 [T1] 1.58 dBm RBW 3 MHz RF Att 30 dB  
2.40192986 GHz VBW 3 MHz Unit dBm  
SWT 5 ms

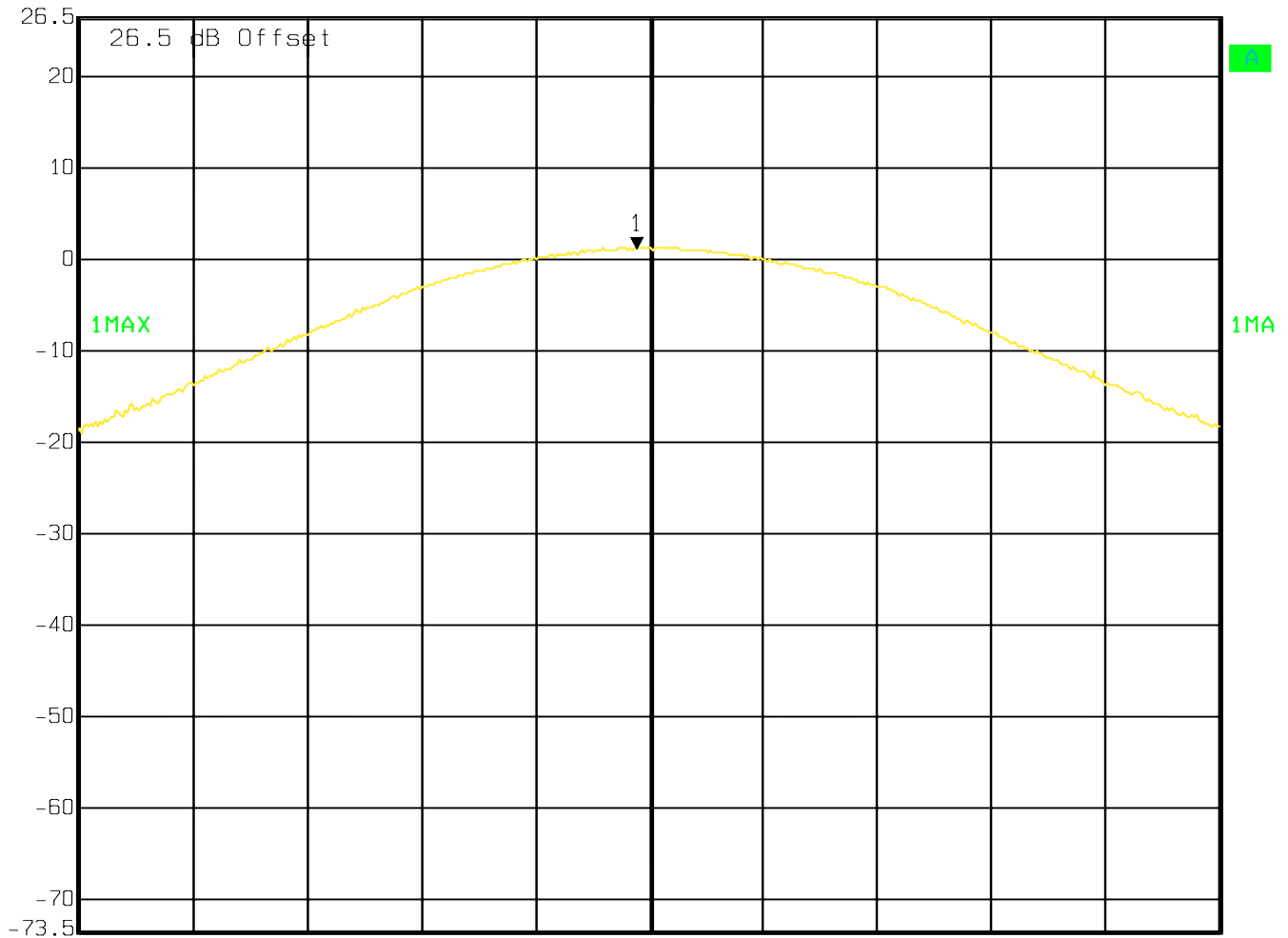


Center 2.402 GHz 1 MHz Span 10 MHz

Date: 04.JAN.2010 11:45:06

**Conducted Peak Power 8DPSK 2441 MHz**


 Ref Lvl 26.5 dBm  
 Marker 1 [T1] 1.21 dBm  
 2.44088978 GHz  
 RBW 3 MHz RF Att 30 dB  
 VBW 3 MHz  
 SWT 5 ms Unit dBm

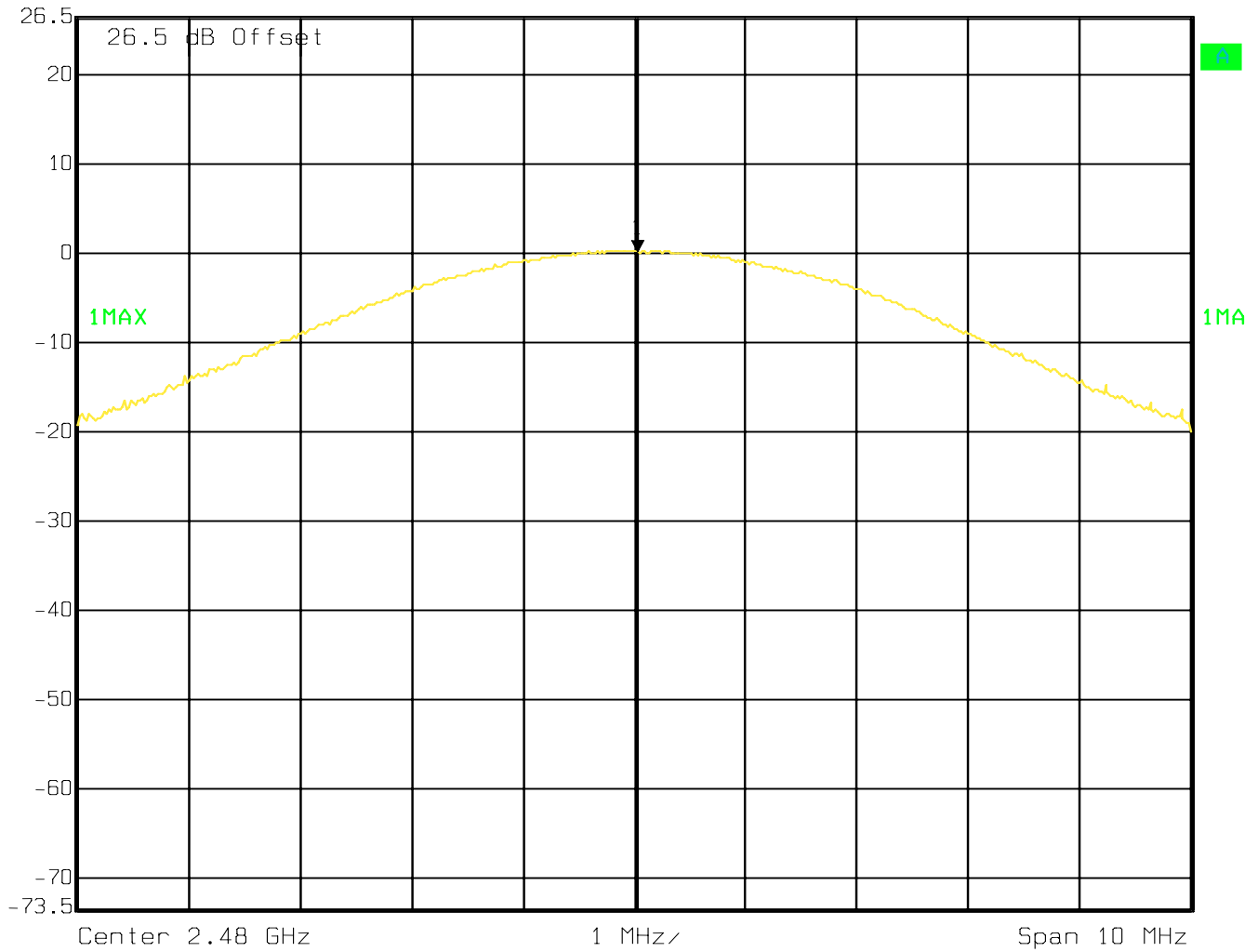


Center 2.441 GHz 1 MHz Span 10 MHz

Date: 04.JAN.2010 11:46:45

**Conducted Peak Power 8DPSK 2480 MHz**


 Ref Lvl 26.5 dBm  
 Marker 1 [T1] 0.21 dBm  
 2.48003006 GHz  
 RBW 3 MHz RF Att 30 dB  
 VBW 3 MHz  
 SWT 5 ms Unit dBm



Date: 04.JAN.2010 11:48:10

## 5.4 Restricted Band Edge Compliance

### 5.4.1 Limits: §15.247/15.205

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                        | MHz                   | MHz             | GHz              |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 0.495 - 0.505 | 16.69475 - 16.69525   | 608 - 614       | 5.35 - 5.46      |
| 2.1735 - 2.1905            | 16.80425 - 16.80475   | 960 - 1240      | 7.25 - 7.75      |
| 4.125 - 4.128              | 25.5 - 25.67          | 1300 - 1427     | 8.025 - 8.5      |
| 4.17725 - 4.17775          | 37.5 - 38.25          | 1435 - 1626.5   | 9.0 - 9.2        |
| 4.20725 - 4.20775          | 73 - 74.6             | 1645.5 - 1646.5 | 9.3 - 9.5        |
| 6.215 - 6.218              | 74.8 - 75.2           | 1660 - 1710     | 10.6 - 12.7      |
| 6.26775 - 6.26825          | 108 - 121.94          | 1718.8 - 1722.2 | 13.25 - 13.4     |
| 6.31175 - 6.31225          | 123 - 138             | 2200 - 2300     | 14.47 - 14.5     |
| 8.291 - 8.294              | 149.9 - 150.05        | 2310 - 2390     | 15.35 - 16.2     |
| 8.362 - 8.366              | 156.52475 - 156.52525 | 2483.5 - 2500   | 17.7 - 21.4      |
| 8.37625 - 8.38675          | 156.7 - 156.9         | 2690 - 2900     | 22.01 - 23.12    |
| 8.41425 - 8.41475          | 162.0125 - 167.17     | 3260 - 3267     | 23.6 - 24.0      |
| 12.29 - 12.293             | 167.72 - 173.2        | 3332 - 3339     | 31.2 - 31.8      |
| 12.51975 - 12.52025        | 240 - 285             | 3345.8 - 3358   | 36.43 - 36.5     |
| 12.57675 - 12.57725        | 322 - 335.4           | 3600 - 4400     | ( <sup>2</sup> ) |
| 13.36 - 13.41              |                       |                 |                  |

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

\*PEAK LIMIT= 74dBμV/m

\*AVG. LIMIT= 54dBμV/m

## 5.4.2 Test Data/plots:

### Lower band edge peak -GFSK modulation

GFSK\_LBE\_PK

1 / 1

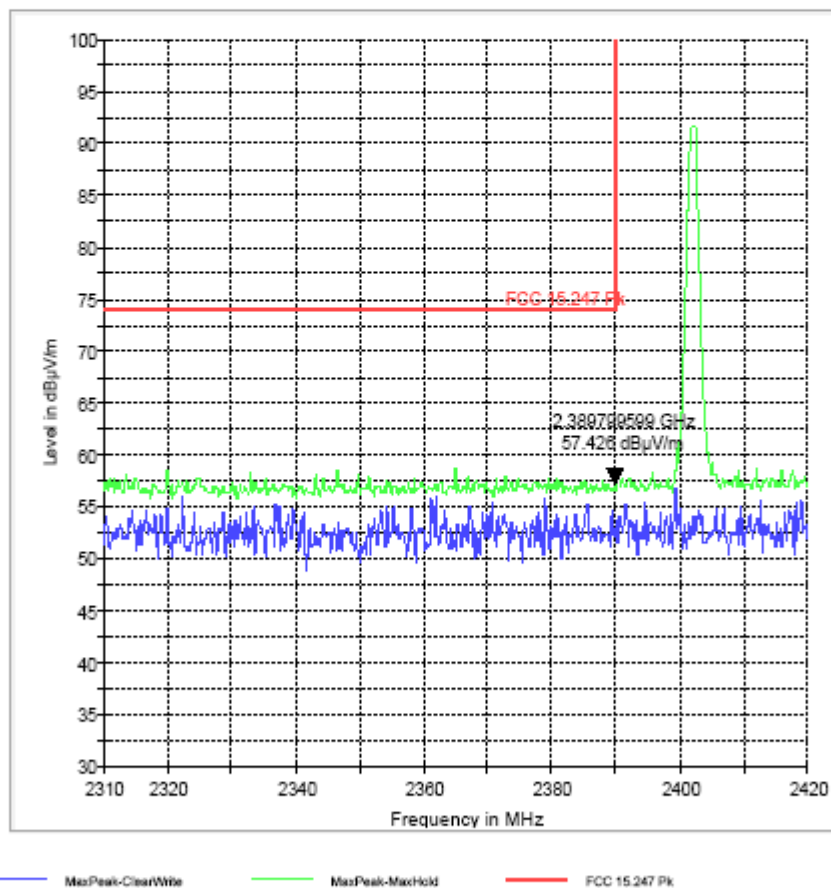
## GFSK\_LBE\_PK

### EUT Information

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | BT SAMPLE                         |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       | GFSK DH5 CH 0                     |

FCC 15.247 LBE Pk 3m



**Lower band edge average -GFSK modulation**

GFSK\_LBE\_AVG

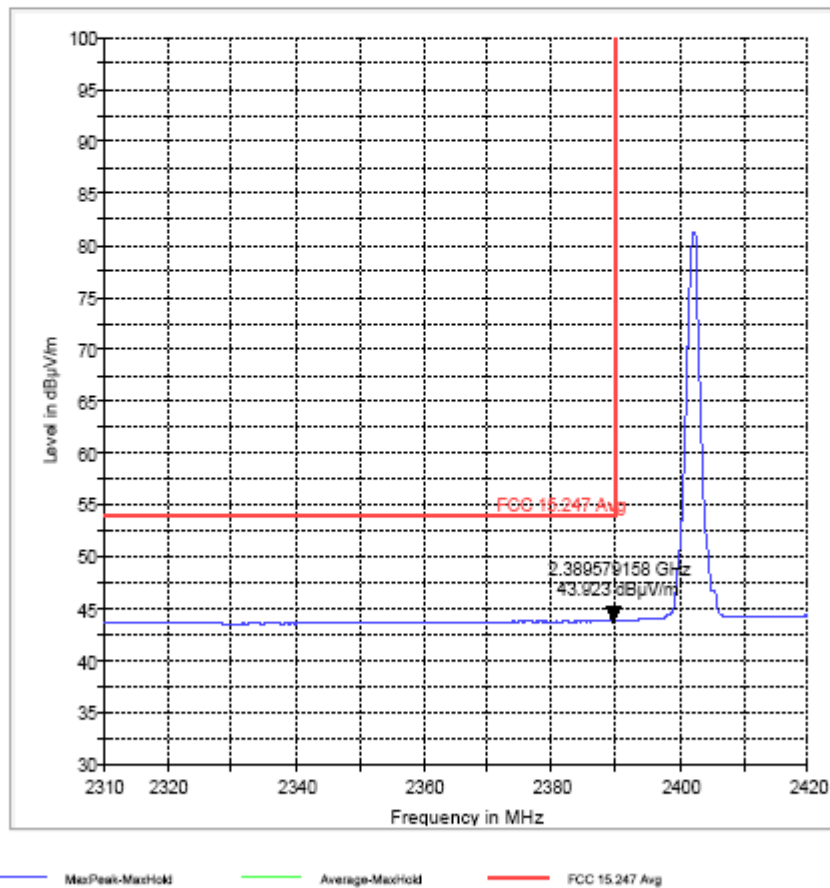
1 / 1

## GFSK\_LBE\_AVG

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: BT SAMPLE  
Configuration: Standard Cover and AC adapter #30  
Comment: GFSK DH5 CH 0

FCC 15.247 LBE Avg 3m



## Higher band edge peak -GFSK modulation

GFSK\_HBE\_PK

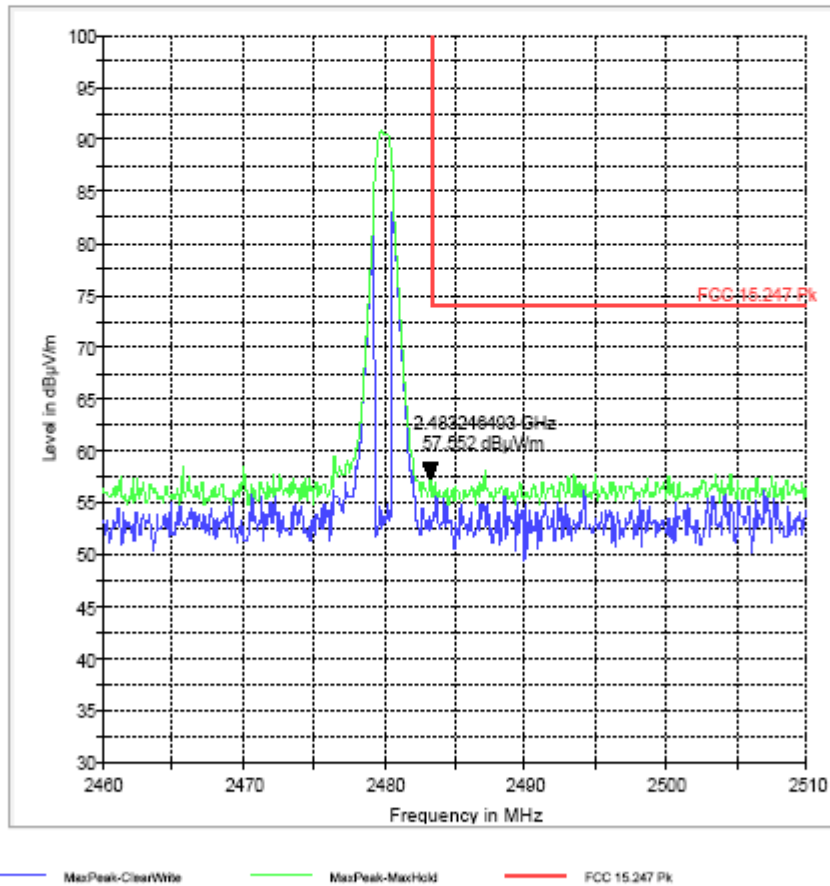
1 / 1

### GFSK\_HBE\_PK

#### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: BT SAMPLE  
Configuration: Standard Cover and AC adapter #30  
Comment: GFSK DH5 CH 78

FCC 15.247 HBE Pk 3m



## Higher band edge average-GFSK modulation

GFSK\_HBE\_AVG

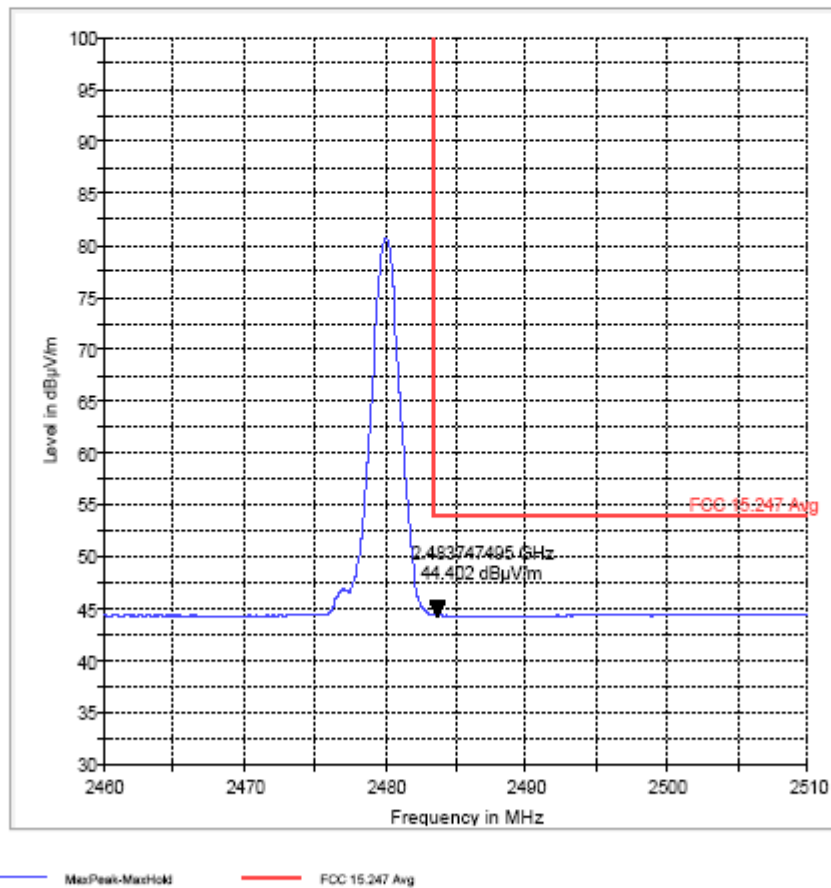
1 / 1

### GFSK\_HBE\_AVG

#### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: BT SAMPLE  
Configuration: Standard Cover and AC adapter #30  
Comment: GFSK DH5 CH 78

FCC 15.247 HBE Avg 3m



**Lower band edge peak -  $\pi/4$  DQPSK modulation**

DQPSK\_LBE\_PK

1 / 1

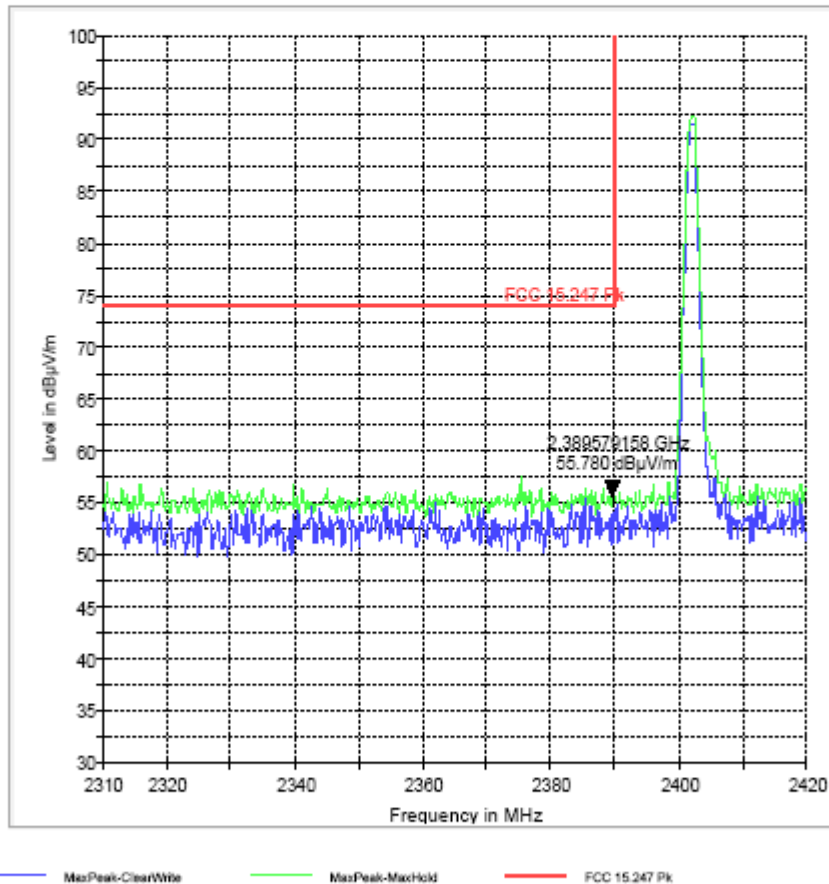
## DQPSK\_LBE\_PK

### EUT Information

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | BT SAMPLE                         |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       | DQPSK DH5 CH 0                    |

FCC 15.247 LBE Pk 3m



**Lower band edge average  $-\pi/4$  DQPSK modulation**

DQPSK\_LBE\_AVG

1 / 1

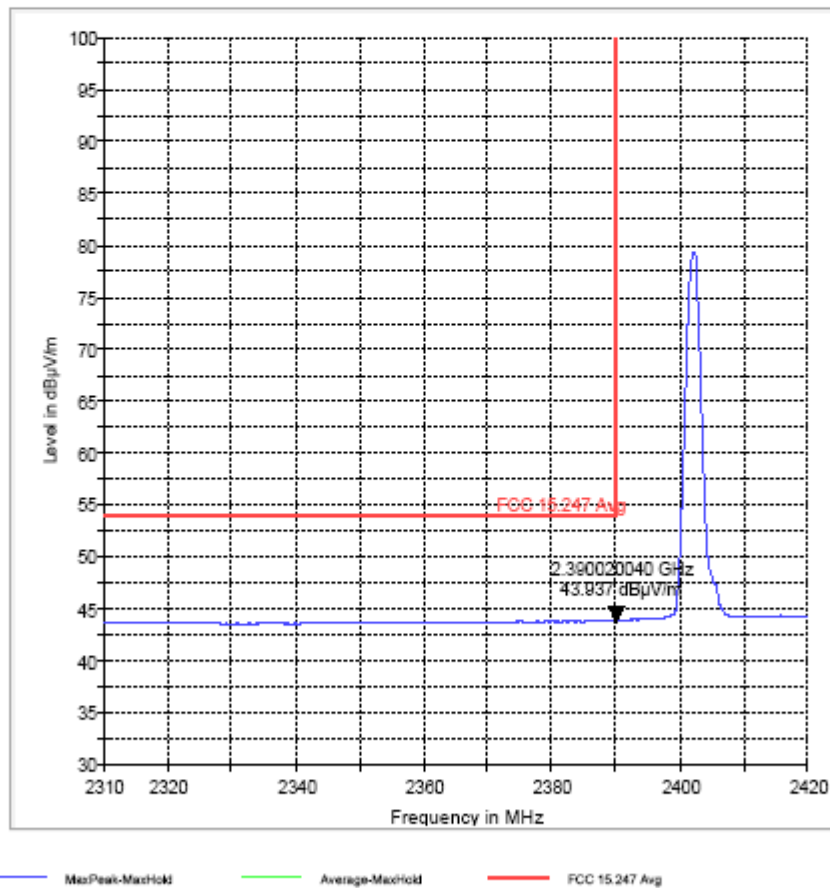
## DQPSK\_LBE\_AVG

### EUT Information

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | BT SAMPLE                         |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       | DQPSK DH5 CH 0                    |

FCC 15.247 LBE Avg 3m



**Higher band edge peak  $-\pi/4$  DQPSK modulation**

DQPSK\_HBE\_PK

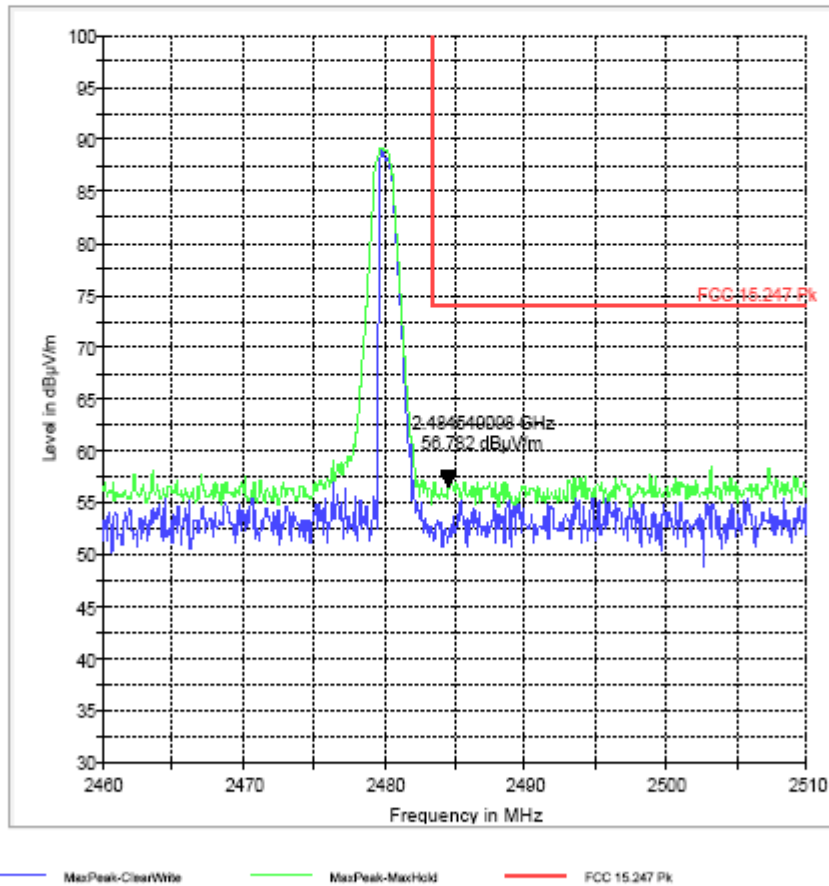
1 / 1

## DQPSK\_HBE\_PK

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: BT SAMPLE  
Configuration: Standard Cover and AC adapter #30  
Comment: DQPSK DH5 CH 78

FCC 15.247 HBE Pk 3m



**Higher band edge average-  $\pi/4$  DQPSK modulation**

DQPSK\_HBE\_AVG

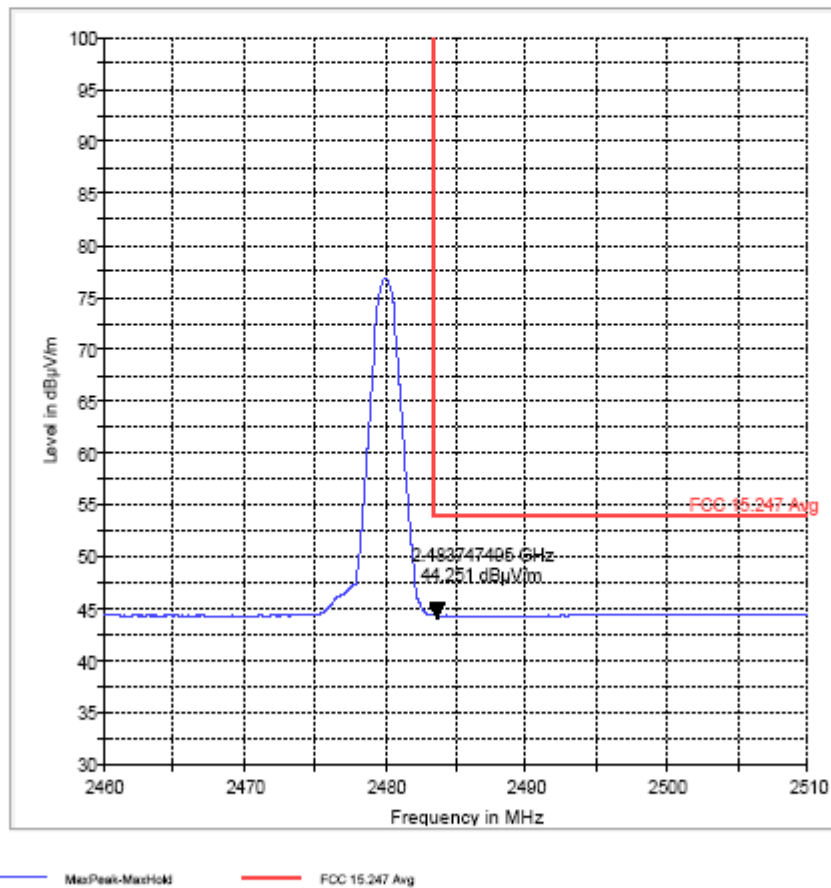
1 / 1

## DQPSK\_HBE\_AVG

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: BT SAMPLE  
Configuration: Standard Cover and AC adapter #30  
Comment: DQPSK DH5 CH 78

FCC 15.247 HBE Avg 3m



## Lower band edge peak - 8DPSK modulation

8DPSK\_LBE\_PK

1 / 1

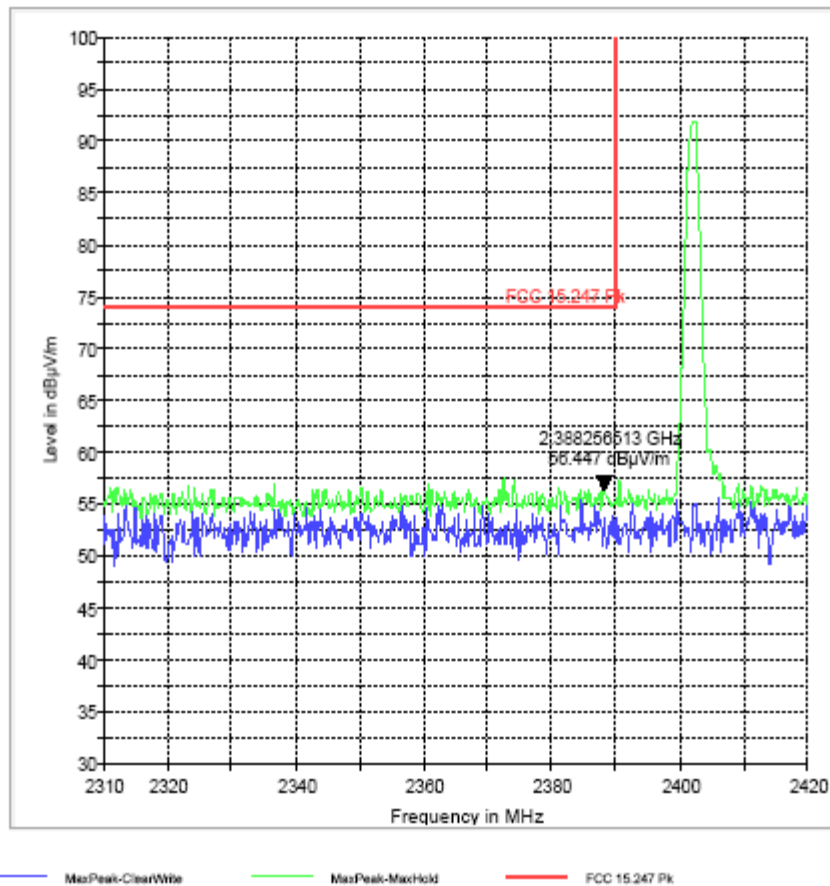
### 8DPSK\_LBE\_PK

#### EUT Information

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | BT SAMPLE                         |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       | 8DPSK DH5 CH 0                    |

FCC 15.247 LBE Pk 3m



**Lower band edge average -8DPSK modulation**

8DPSK\_LBE\_AVG

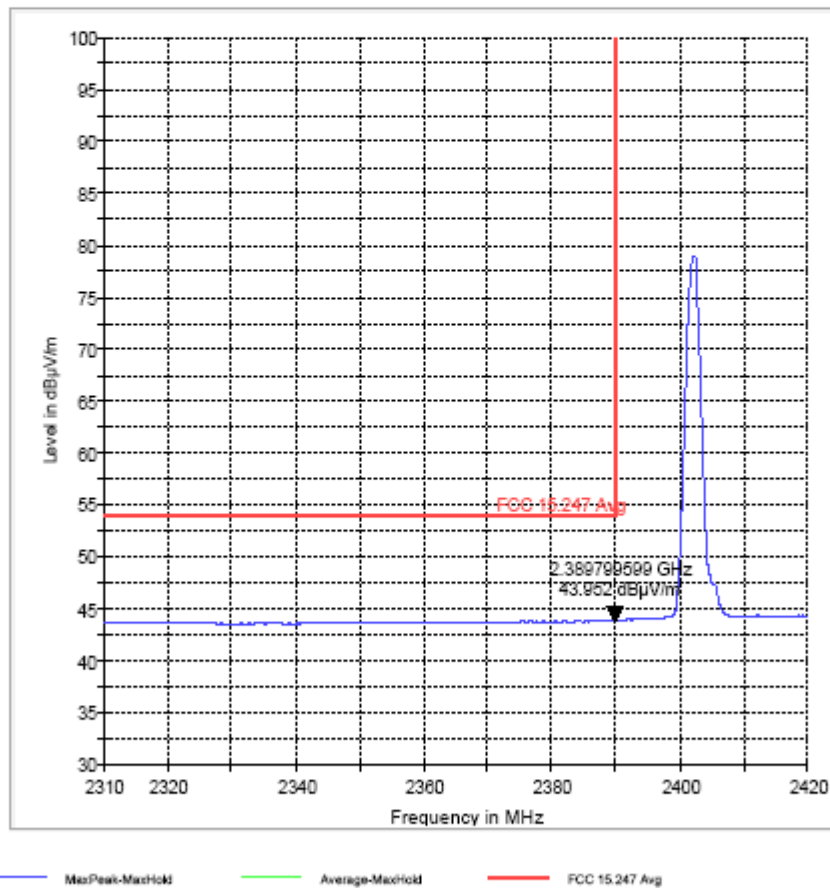
1 / 1

## 8DPSK\_LBE\_AVG

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: BT SAMPLE  
Configuration: Standard Cover and AC adapter #30  
Comment: 8DPSK DH5 CH 0

FCC 15.247 LBE Avg 3m



**Higher band edge peak - 8DPSK modulation**

8DPSK\_HBE\_PK

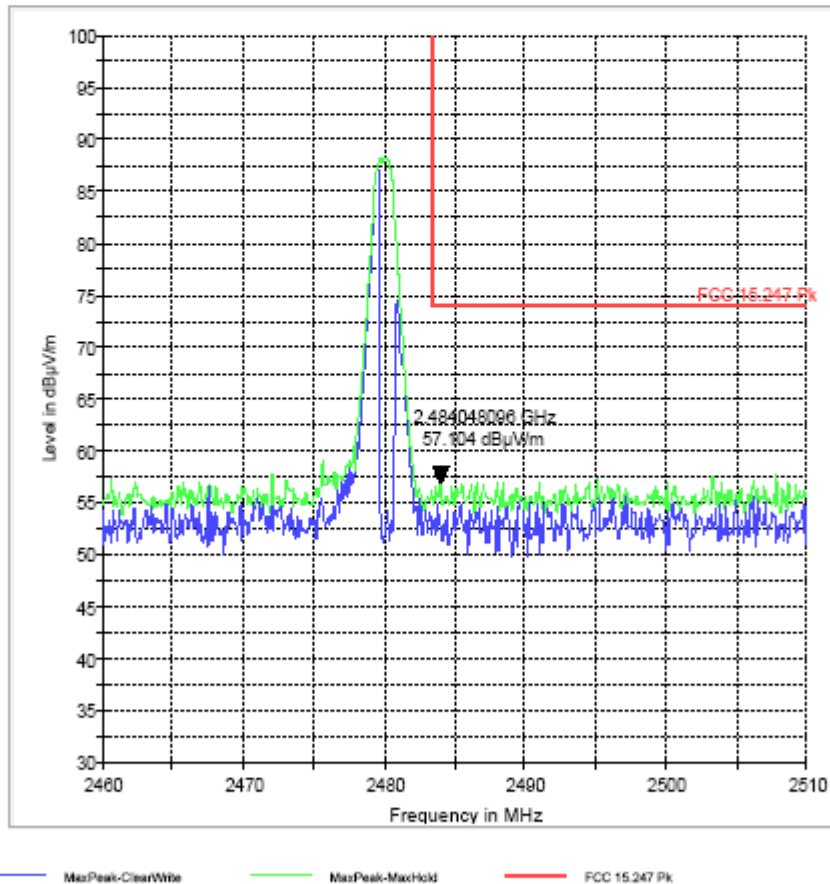
1 / 1

**8DPSK\_HBE\_PK**

**EUT Information**

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: BT SAMPLE  
Configuration: Standard Cover and AC adapter #30  
Comment: 8DPSK DH5 CH 78

FCC 15.247 HBE Pk 3m



## Higher band edge average-8DPSK modulation

8DPSK\_HBE\_AVG

1 / 1

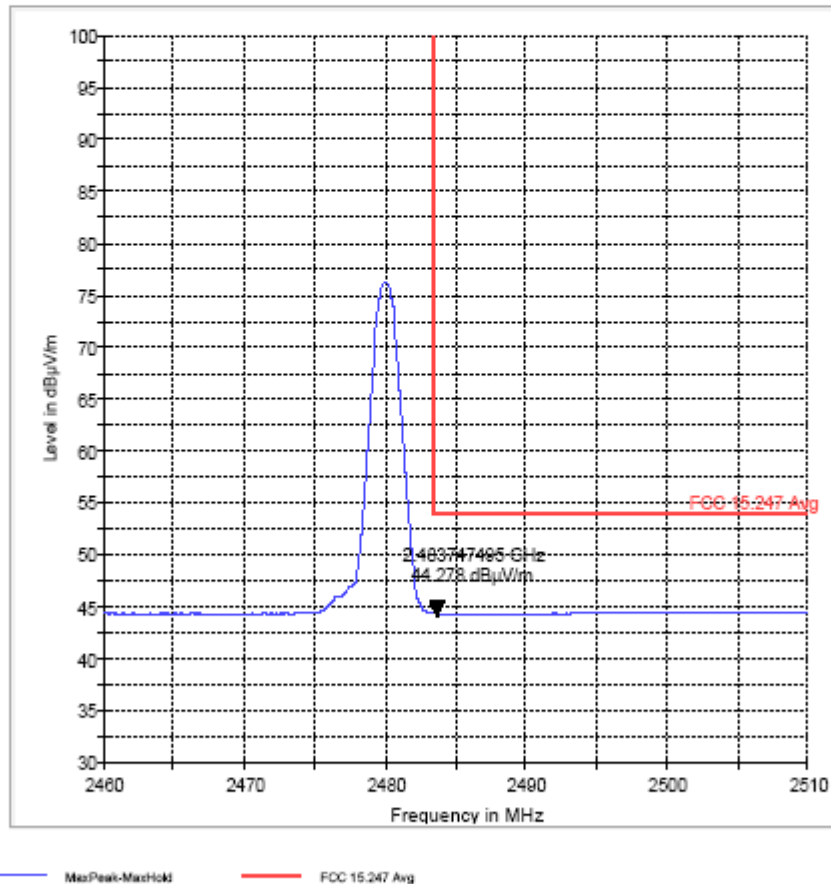
### 8DPSK\_HBE\_AVG

#### EUT Information

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | BT SAMPLE                         |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       | 8DPSK DH5 CH 78                   |

FCC 15.247 HBE Avg 3m



## 5.5 Spectrum Bandwidth/ 20dB Bandwidth

### 5.5.1 Limits: § 15.247 (a)(1)

Frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

GFSK < 1000 kHz

$\pi / 4$  DQPSK < 1500 kHz

8 dPSK < 1500kHz

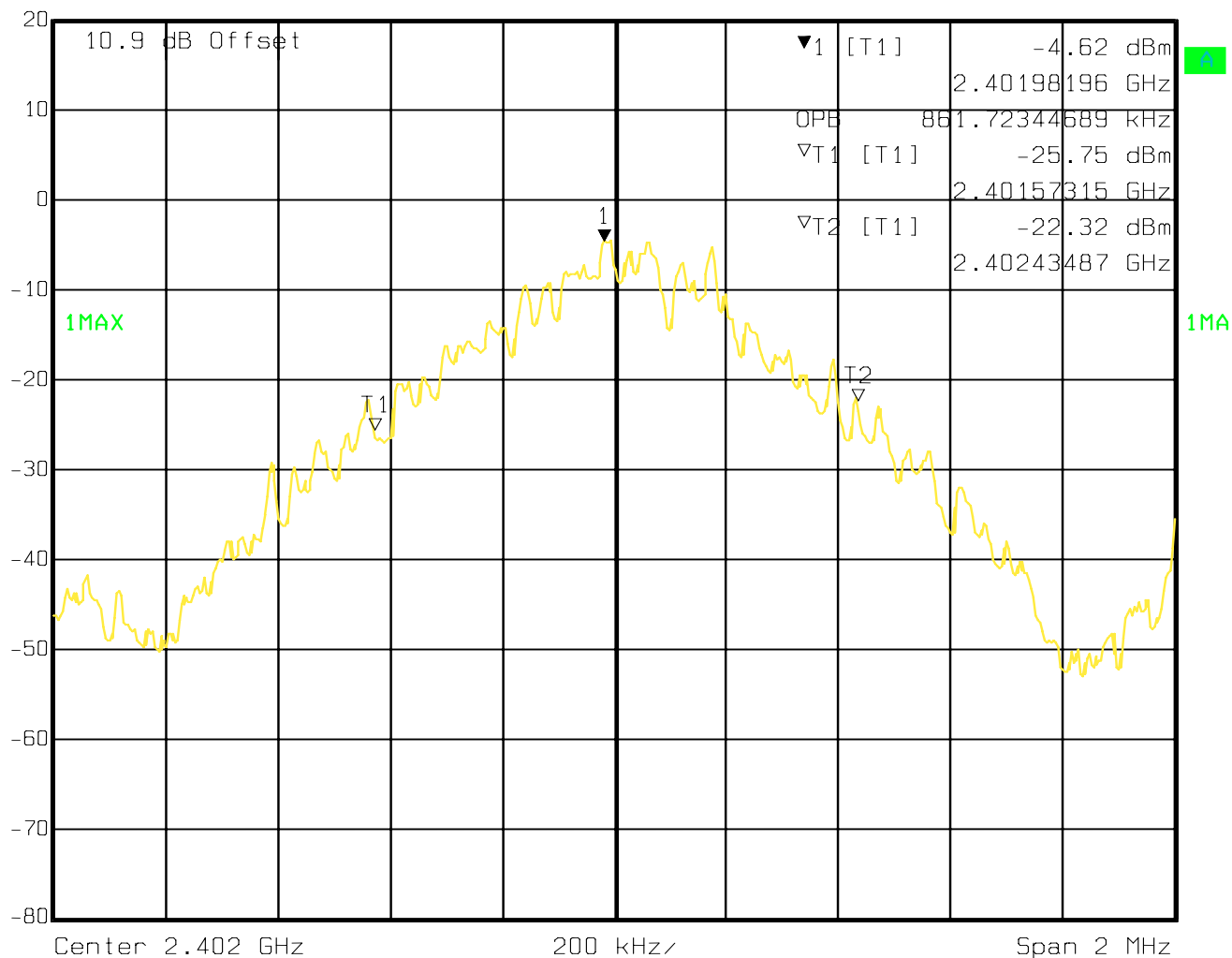
### 5.5.2 Test Result:

| 20dB Bandwidth (kHz)                 |                 |       |       |
|--------------------------------------|-----------------|-------|-------|
| Modulation                           | Frequency (MHz) |       |       |
|                                      | 2402            | 2442  | 2480  |
| <b>GFSK</b>                          | 0.862           | 0.862 | 0.862 |
| <b><math>\pi/4</math> DQPSK</b>      | 1.17            | 1.17  | 1.17  |
| <b>8-DPSK</b>                        | 1.18            | 1.18  | 1.18  |
| Measurement Uncertainty: $\pm 1$ kHz |                 |       |       |

RBW=VBW=10 kHz

**5.5.3 Test Data/plots:**  
**20dB Bandwidth GFSK 2402MHz**

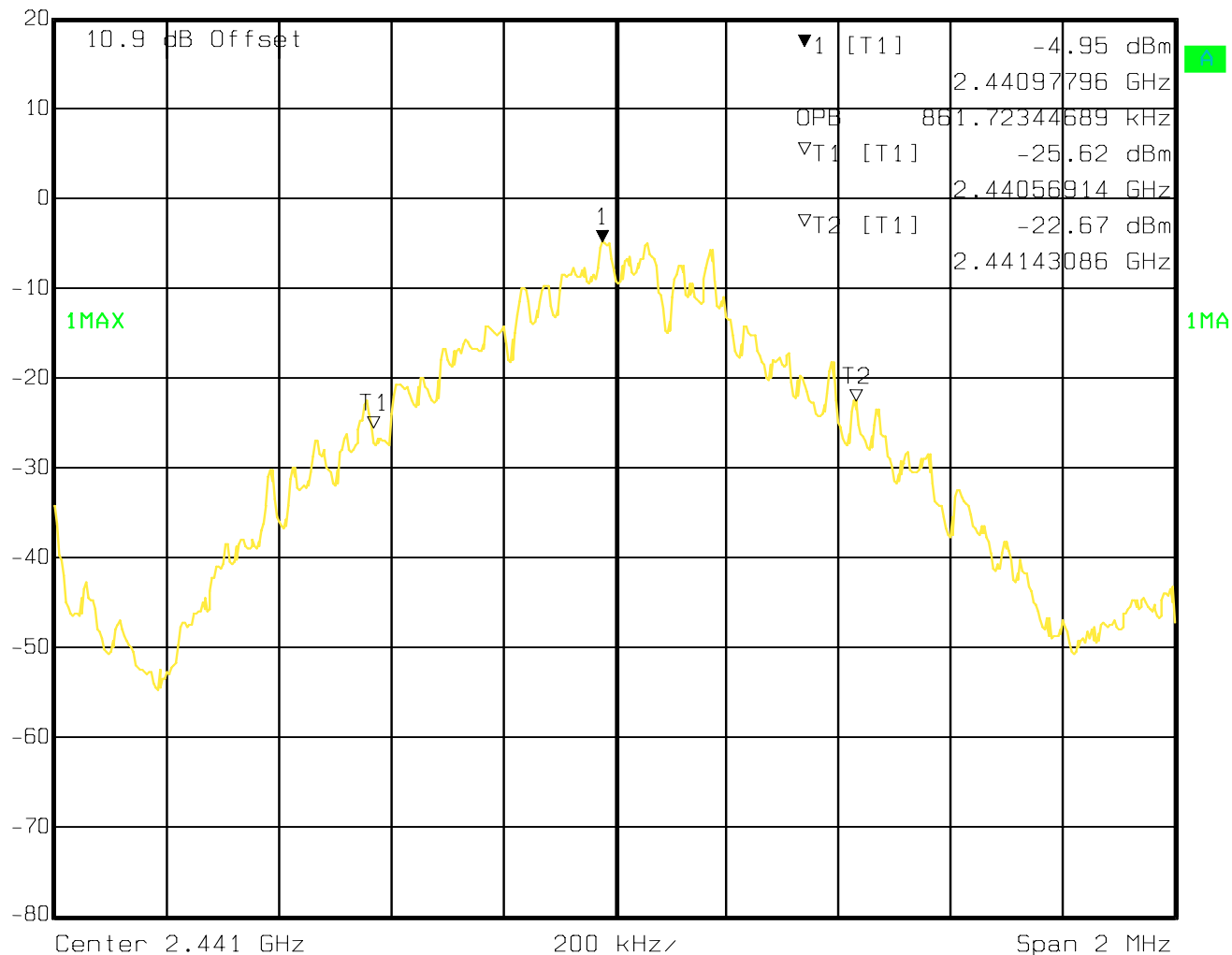
 Ref Lvl 20 dBm Marker 1 [T1] -4.62 dBm RBW 10 kHz RF Att 30 dB  
 2.40198196 GHz VBW 10 kHz Unit dBm  
 SWT 50 ms



Date: 14.JAN.2010 15:25:10

**20dB Bandwidth GFSK 2441MHz**

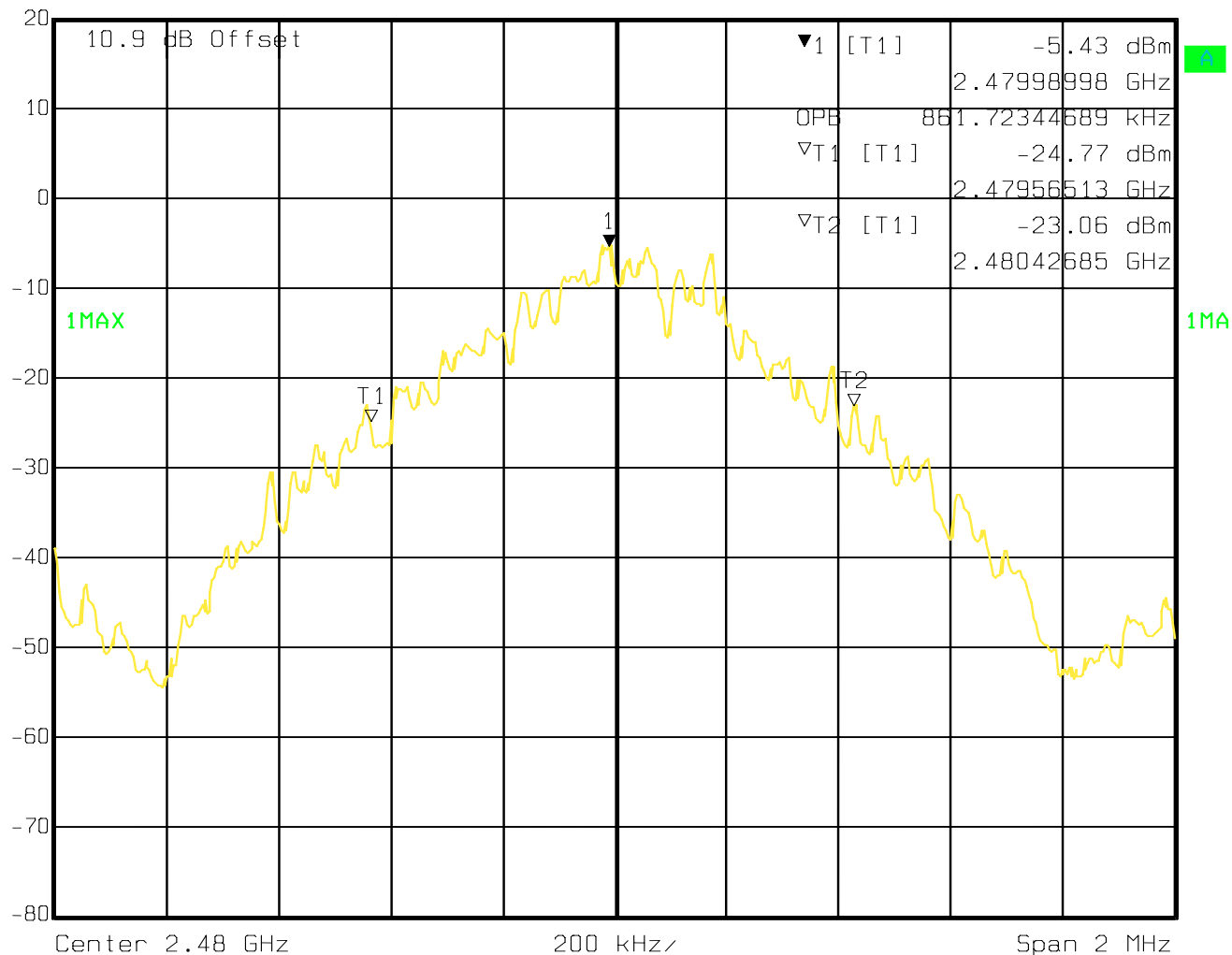

 Ref Lvl 20 dBm  
 Marker 1 [T1] -4.95 dBm  
 2.44097796 GHz  
 RBW 10 kHz RF Att 30 dB  
 VBW 10 kHz  
 SWT 50 ms Unit dBm



Date: 14.JAN.2010 16:35:56

**20dB Bandwidth GFSK 2480MHz**

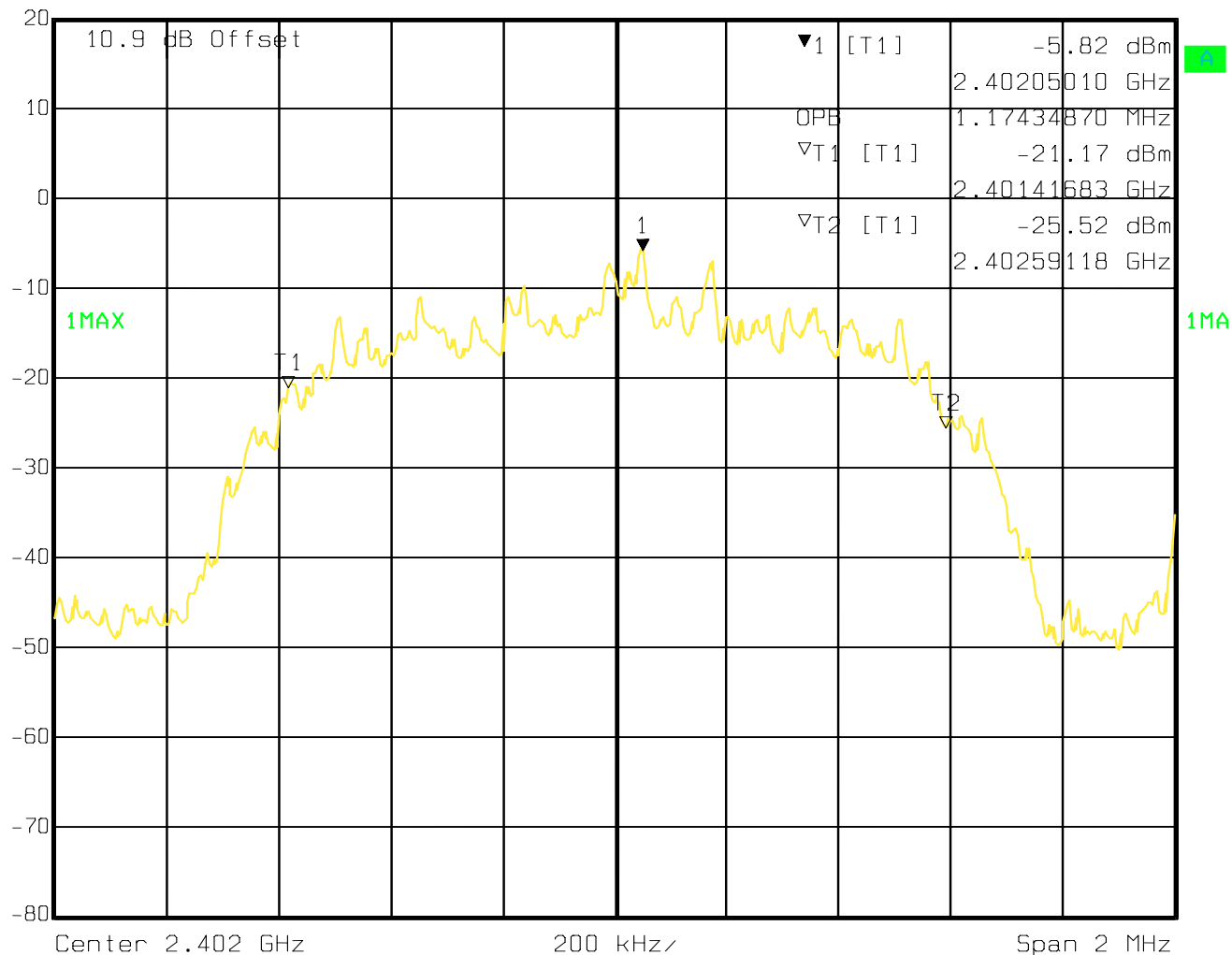

 Ref Lvl 20 dBm  
 Marker 1 [T1] -5.43 dBm  
 2.47998998 GHz  
 RBW 10 kHz RF Att 30 dB  
 VBW 10 kHz  
 SWT 50 ms Unit dBm



Date: 14.JAN.2010 16:38:34

**20dB Bandwidth  $\pi / 4$  DQPSK 2402MHz**

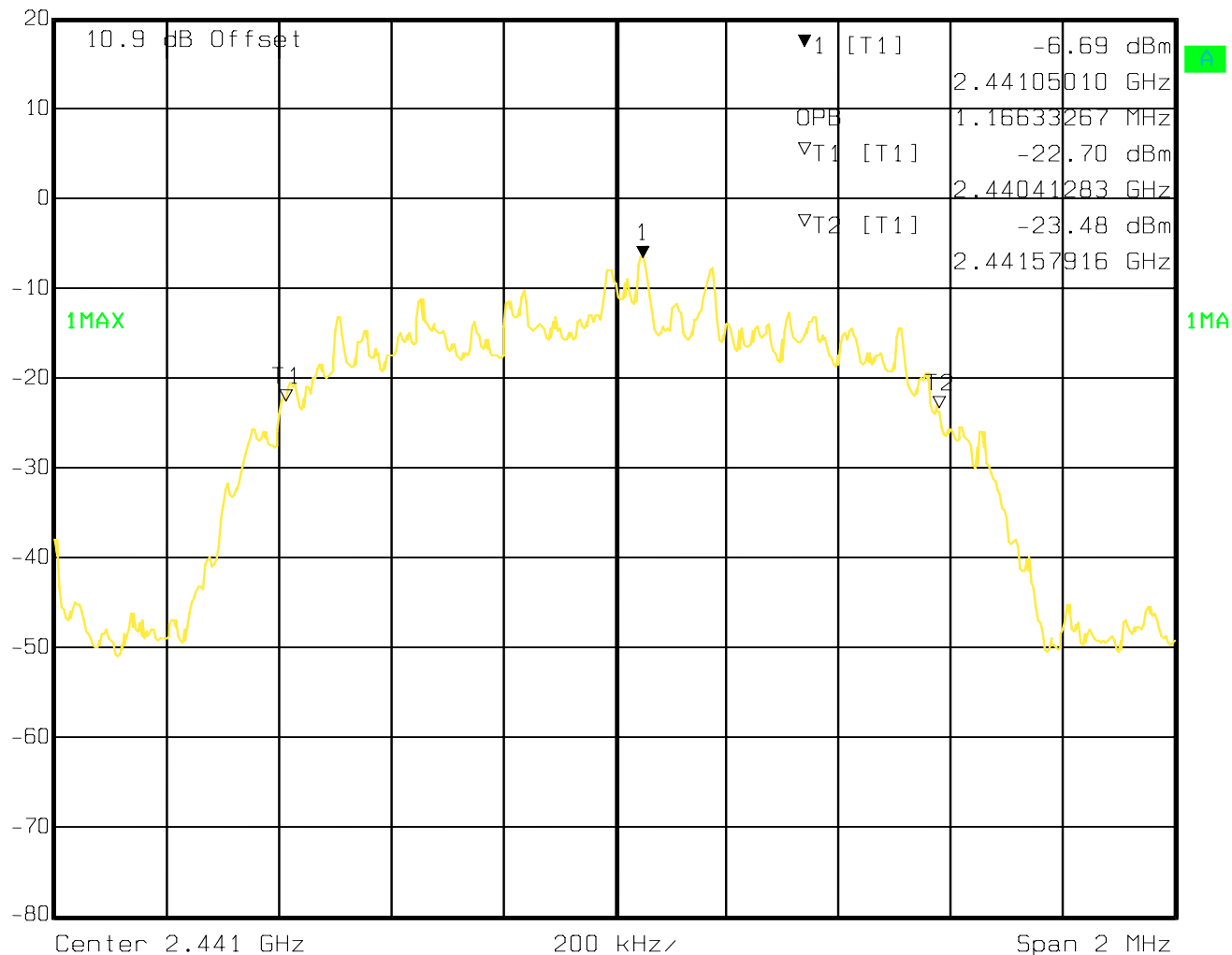

 Ref Lvl 20 dBm  
 Marker 1 [T1] -5.82 dBm  
 2.40205010 GHz  
 RBW 10 kHz RF Att 30 dB  
 VBW 10 kHz  
 SWT 50 ms Unit dBm



Date: 14.JAN.2010 16:29:08

**20dB Bandwidth  $\pi / 4$  DQPSK 2441MHz**

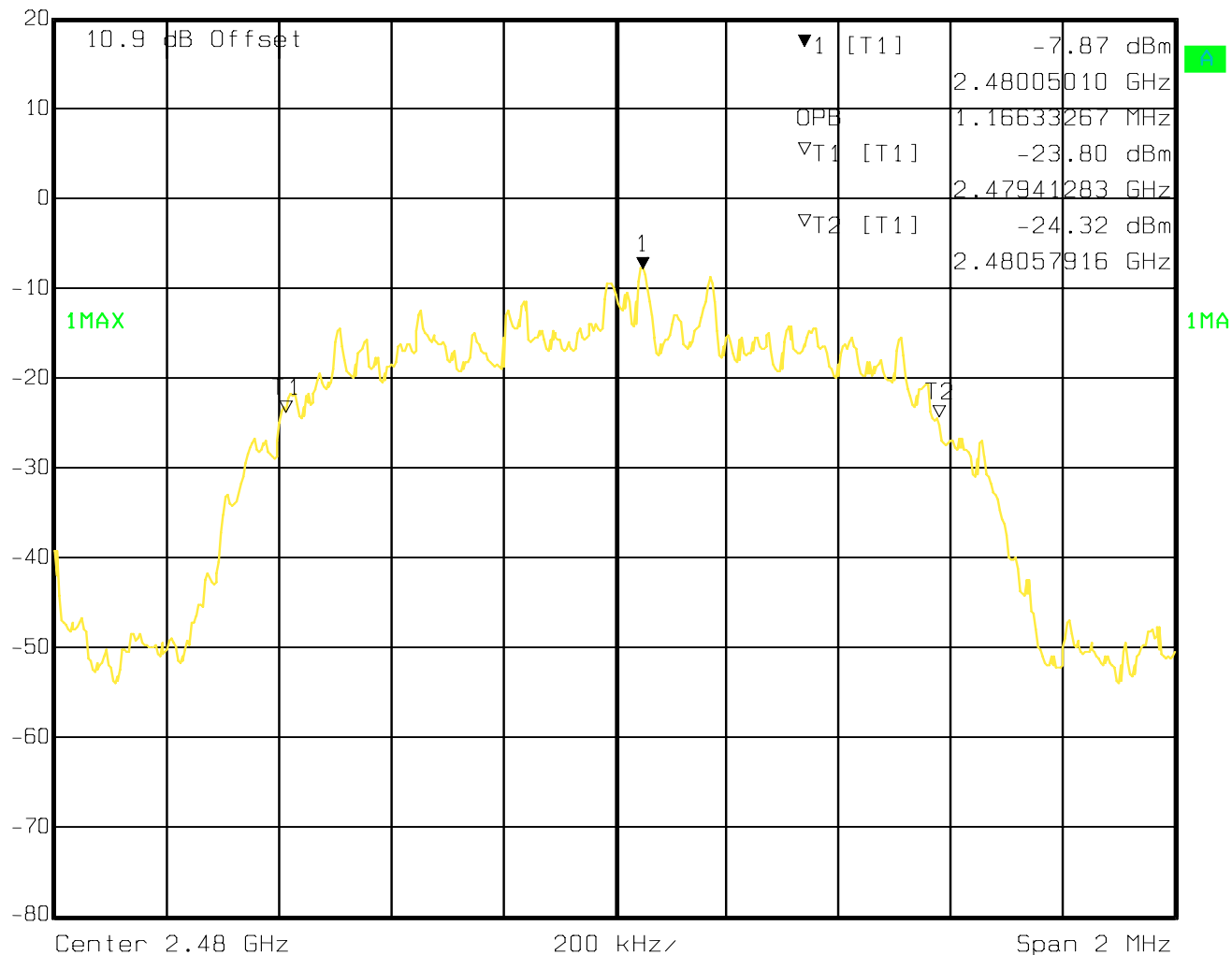

 Ref Lvl 20 dBm  
 Marker 1 [T1] -6.69 dBm  
 2.44105010 GHz  
 RBW 10 kHz RF Att 30 dB  
 VBW 10 kHz  
 SWT 50 ms Unit dBm



Date: 14.JAN.2010 16:34:32

**20dB Bandwidth  $\pi / 4$  DQPSK 2480MHz**

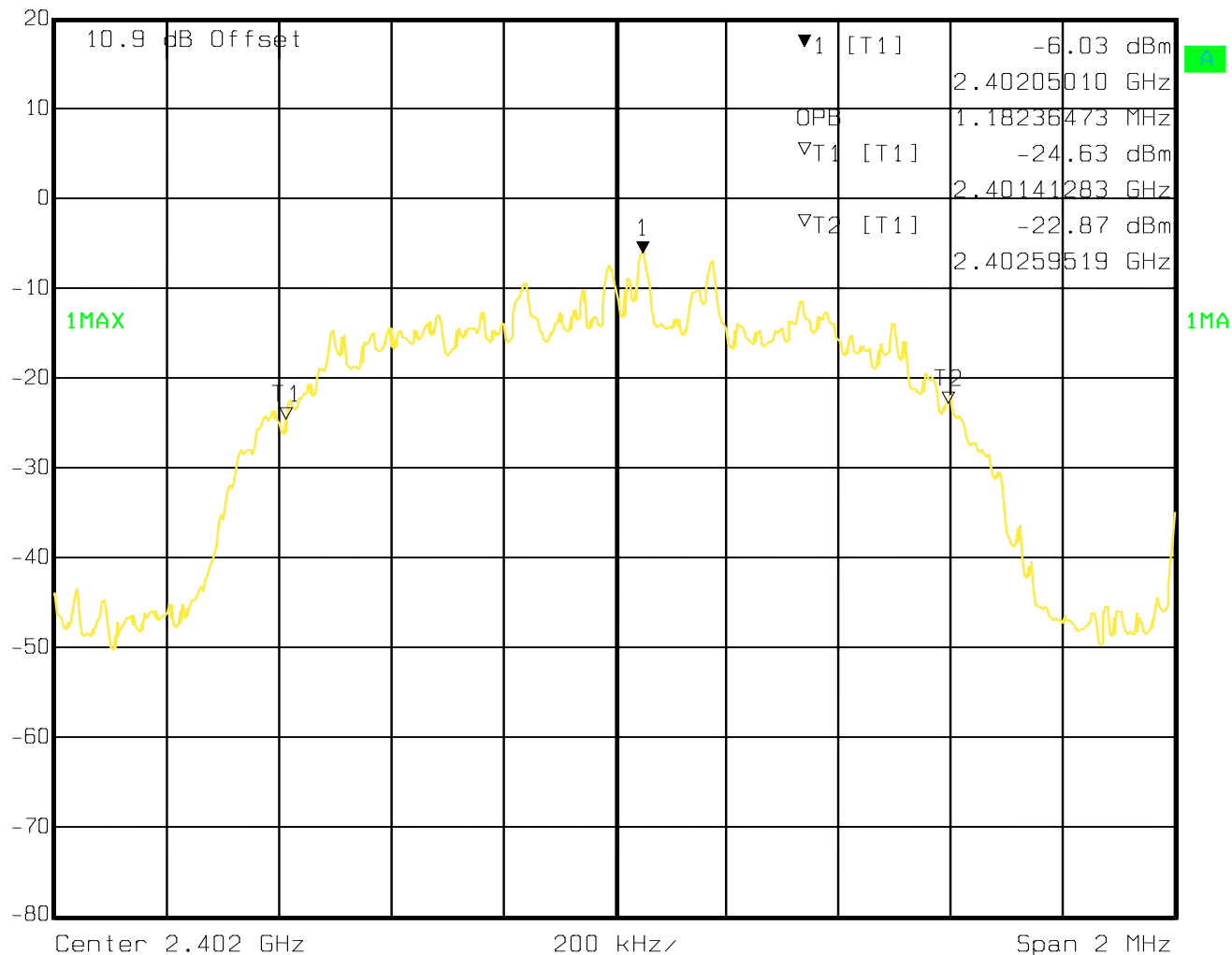

 Ref Lvl 20 dBm  
 Marker 1 [T1] -7.87 dBm  
 2.48005010 GHz  
 RBW 10 kHz RF Att 30 dB  
 VBW 10 kHz  
 SWT 50 ms Unit dBm



Date: 14.JAN.2010 16:39:59

**20dB Bandwidth 8PSK 2402MHz**

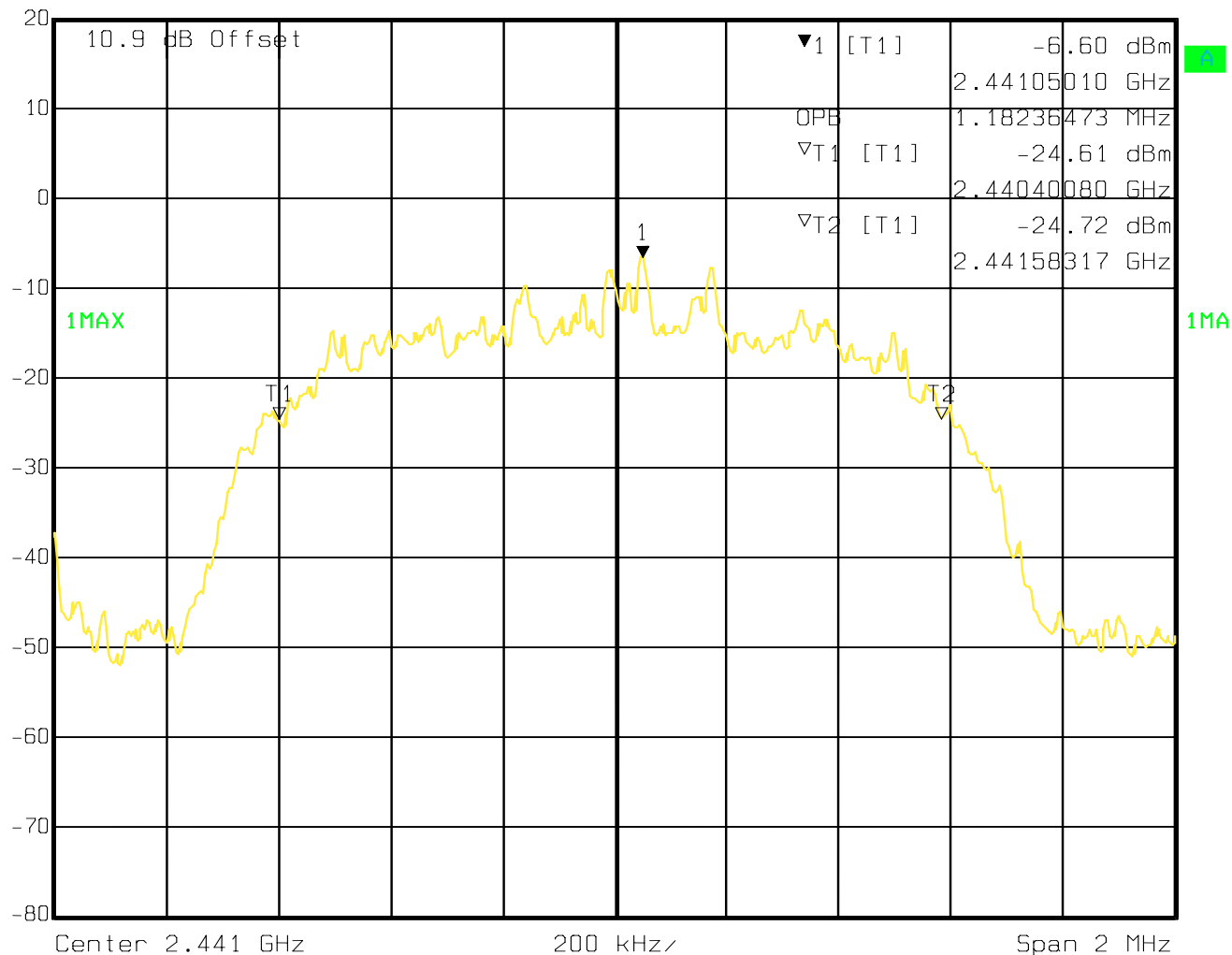

 Ref Lvl 20 dBm  
 Marker 1 [T1] -6.03 dBm  
 2.40205010 GHz  
 RBW 10 kHz RF Att 30 dB  
 VBW 10 kHz  
 SWT 50 ms Unit dBm



Date: 14.JAN.2010 16:30:58

**20dB Bandwidth 8PSK 2441MHz**

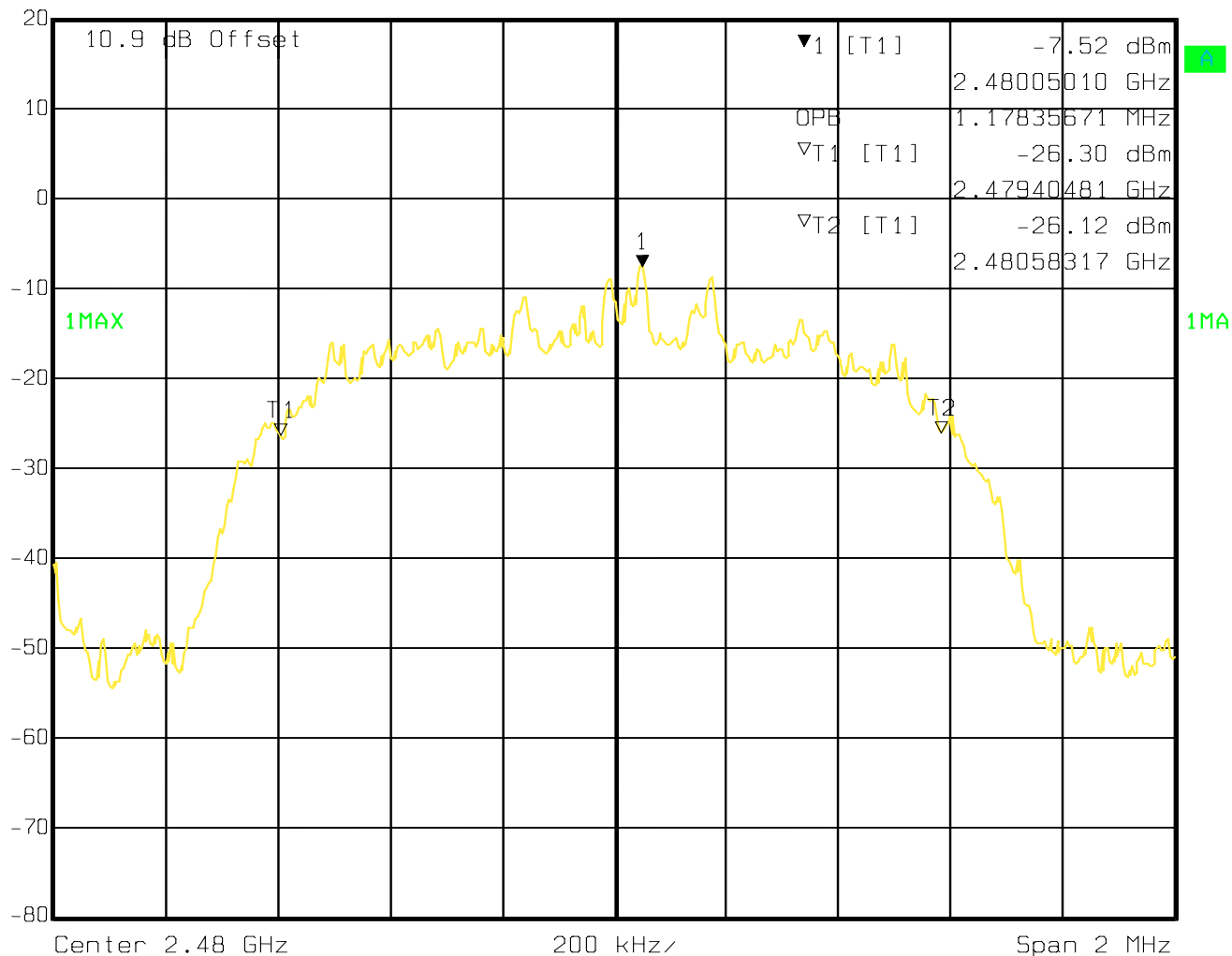

 Ref Lvl 20 dBm  
 Marker 1 [T1] -6.60 dBm  
 2.44105010 GHz  
 RBW 10 kHz RF Att 30 dB  
 VBW 10 kHz  
 SWT 50 ms Unit dBm



Date: 14.JAN.2010 16:32:38

**20dB Bandwidth 8PSK 2480MHz**


 Ref Lvl 20 dBm  
 Marker 1 [T1] -7.52 dBm  
 2.48005010 GHz  
 RBW 10 kHz RF Att 30 dB  
 VBW 10 kHz  
 SWT 50 ms Unit dBm



Date: 14.JAN.2010 16:41:29

## 5.6 Carrier Frequency Separation

### 5.6.1 Limits: § 15.247 (a) (1)

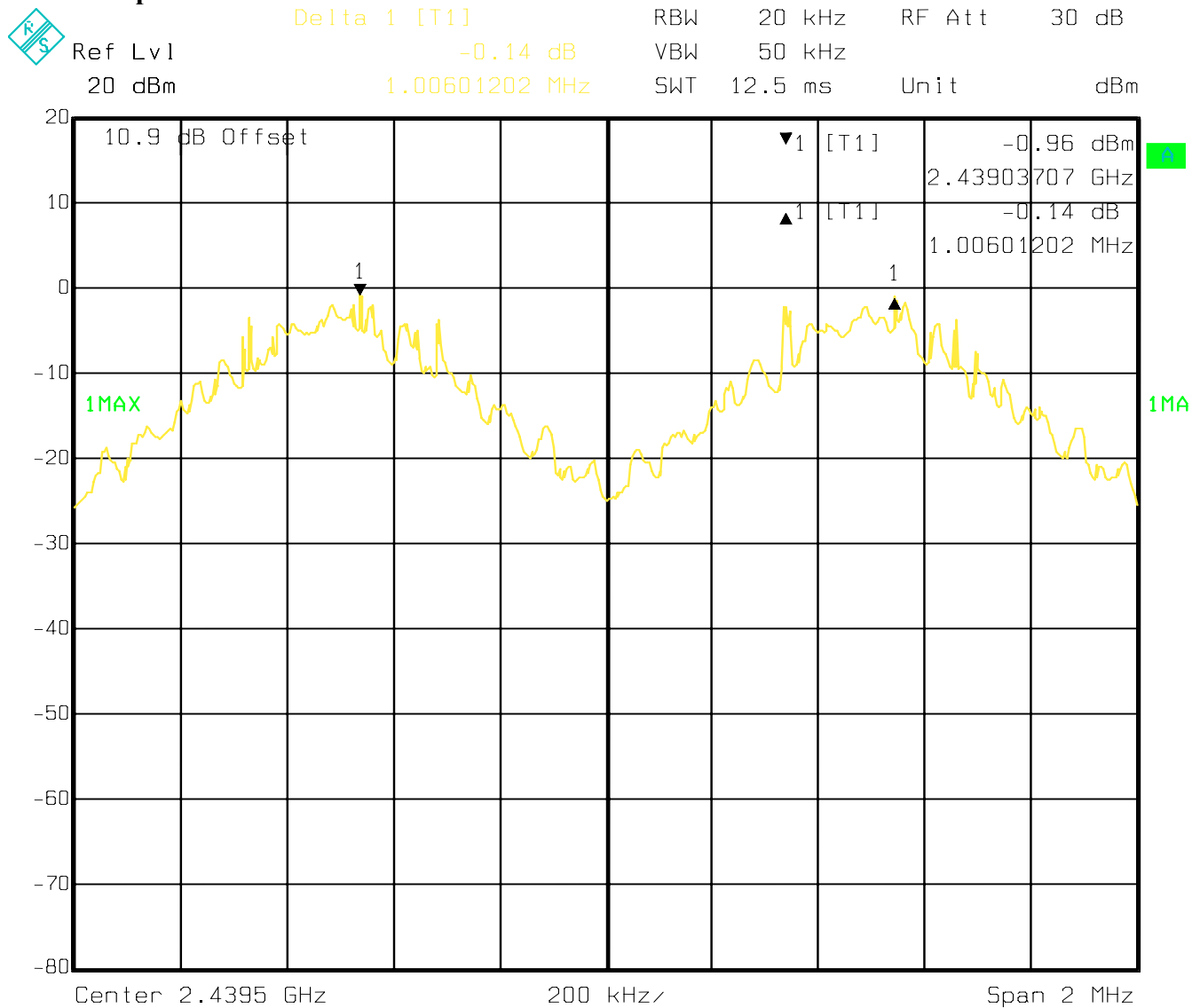
Minimum 25kHz or 2/3 of the 20dB bandwidth of the hopping system

### 5.6.2 Test Result:

Modulation: GFSK

Channel Separation: 1.01 MHz

### 5.6.3 Test Data/plot:



Date: 14.JAN.2010 17:24:13

## 5.7 Number of hopping channels

### 5.7.1 Limits: § 15.247 (a) (1)

Atleast 15 non-overlapping channels

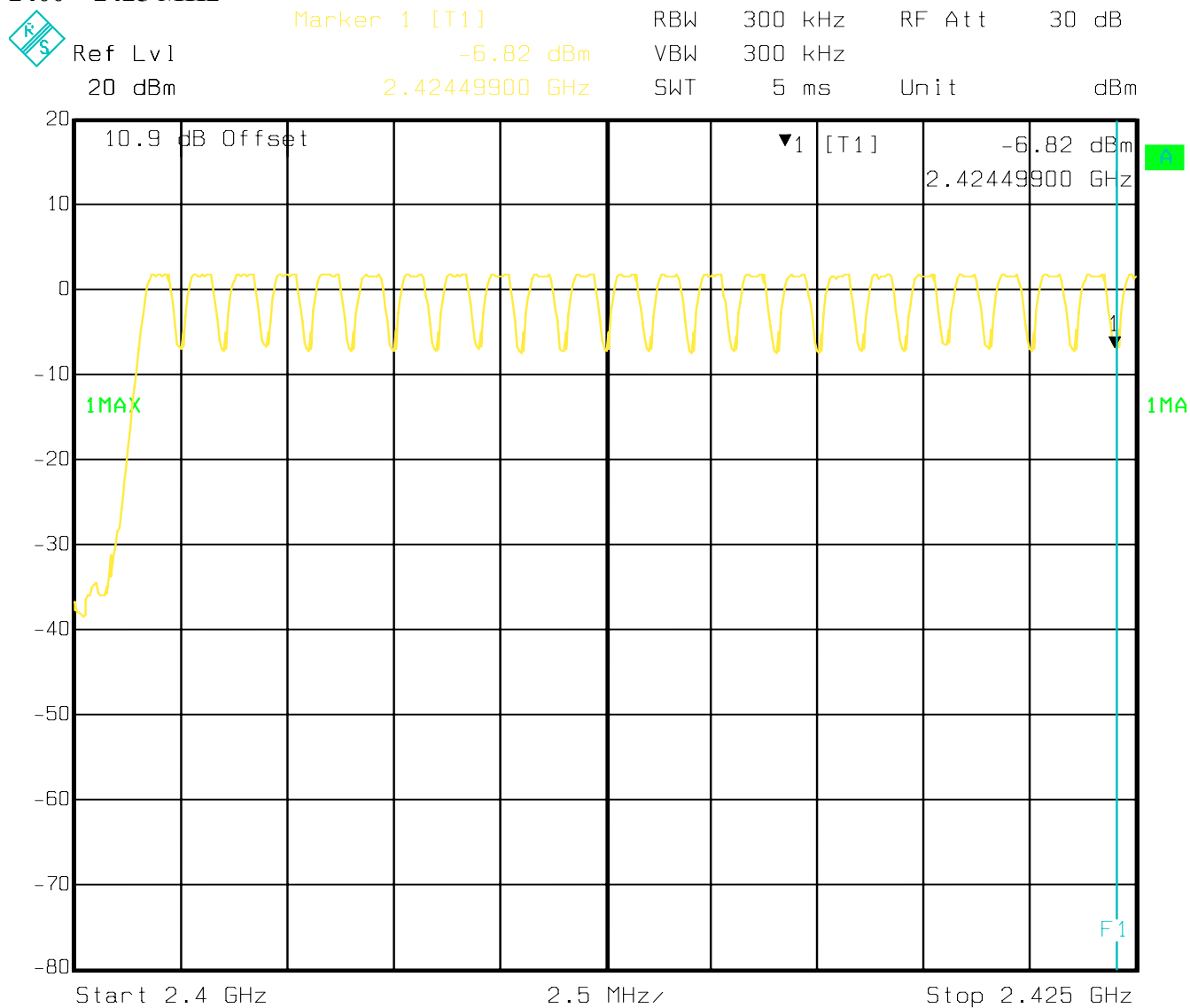
### 5.7.2 Test Result:

Modulation: GFSK

Number of hopping channels: 79

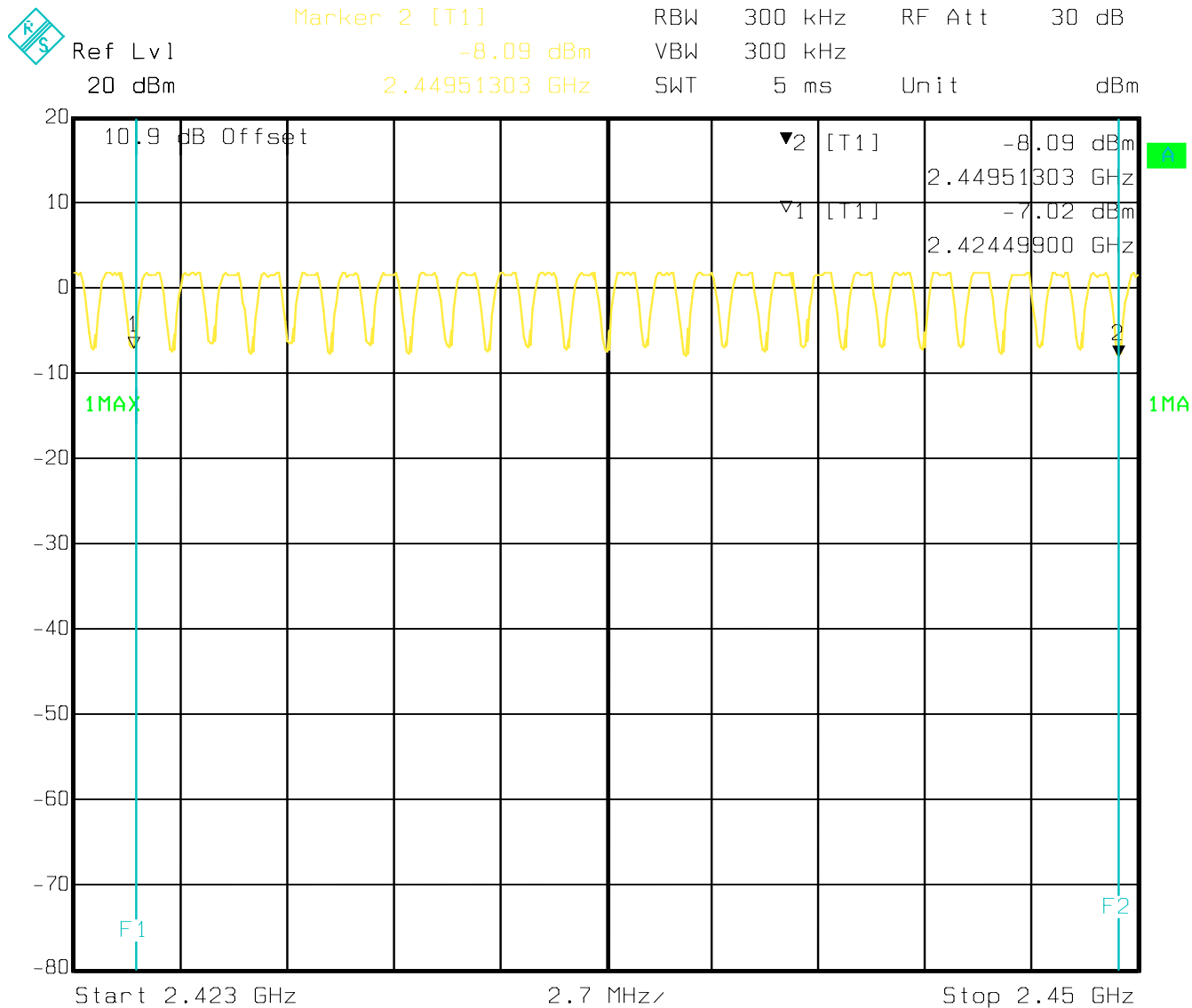
### 5.7.3 Test Data/plot:

2400 – 2425 MHz



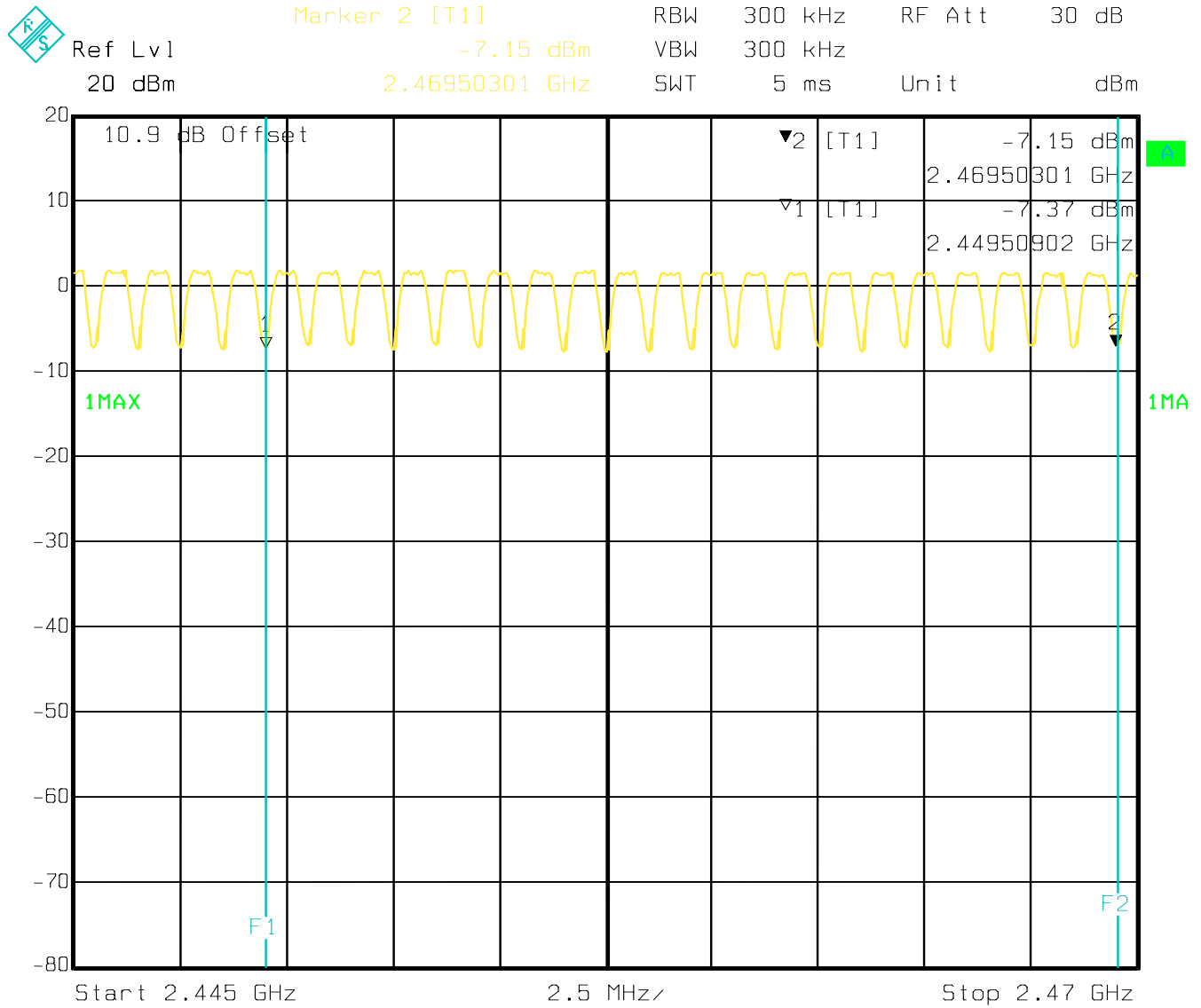
Date: 14.JAN.2010 16:54:16

**2423 – 2450 MHz**



Date: 14.JAN.2010 16:56:08

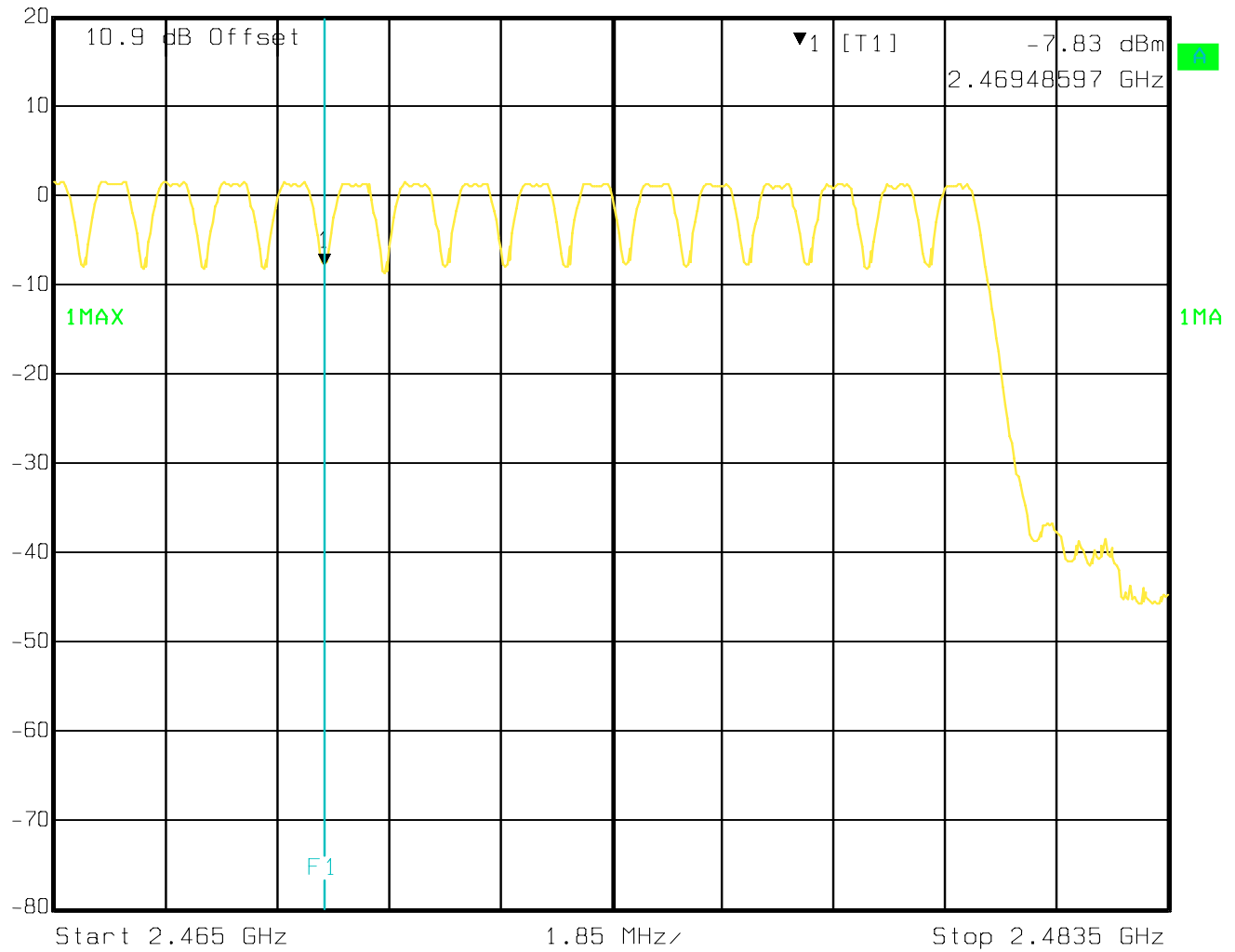
**2445 – 2470 MHz**



Date: 14.JAN.2010 16:58:08

**2465 – 2483.5 MHz**

 Ref Lvl 20 dBm  
 Marker 1 [T1] -7.83 dBm  
 2.46948597 GHz  
 RBW 300 kHz RF Att 30 dB  
 VBW 300 kHz  
 SWT 5 ms Unit dBm



Date: 14.JAN.2010 17:00:03

## **5.8 Time of occupancy (Dwell time)**

### **5.8.1 Limits: § 15.247 (a) (1) (iii)**

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

### **5.8.2 Test Result:**

**Result: 0.312s**

#### **For Bluetooth devices:**

The dwell time of 0.4 s within a 31.6 second period in data mode is independent from the packet type (packet length). The calculation for a 31.6 second period is as follows:

Dwell time = time slot length \* hop rate / number of hopping channels \* 31.6 s

Example for a DH1 packet (with a maximum length of one time slot)

Dwell time =  $625 \mu\text{s} * 1600 \text{ 1/s} / 79 * 31.6 \text{ s} = 0.4 \text{ s}$  (in a 31.6 s period)

For multi-slot packet the hopping is reduced according to the length of the packet.

Example for a DH5 packet (with a maximum length of five time slots)

Dwell time =  $5 * 625 \mu\text{s} * 1600 * 1/5 * 1/s / 79 * 31.6 \text{ s} = 0.4 \text{ s}$  (in a 31.6 s period)

This is according to Bluetooth Core Specification for all Bluetooth devices. Therefore all BT devices satisfy FCC requirement on time of occupancy (dwell time) in the data mode.

## **5.9 Power Spectral Density (Hybrid system in Inquiry mode/ Page scan)**

### **5.9.1 Limits: § 15.247 (e)**

For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

### **5.9.2 Test Result:**

Not Applicable.

## 5.10 Transmitter Spurious Emissions- Conducted

### 5.10.1 Limits: § 15.247 (d)

30dBm for the transmitter.

-20dBc in the frequency range 30MHz- 25GHz.

### 5.10.2 Test Conditions:

Modulation: GFSK

Analyzer settings: RBW=VBW=100 kHz

### 5.10.3 Test data/ plots:

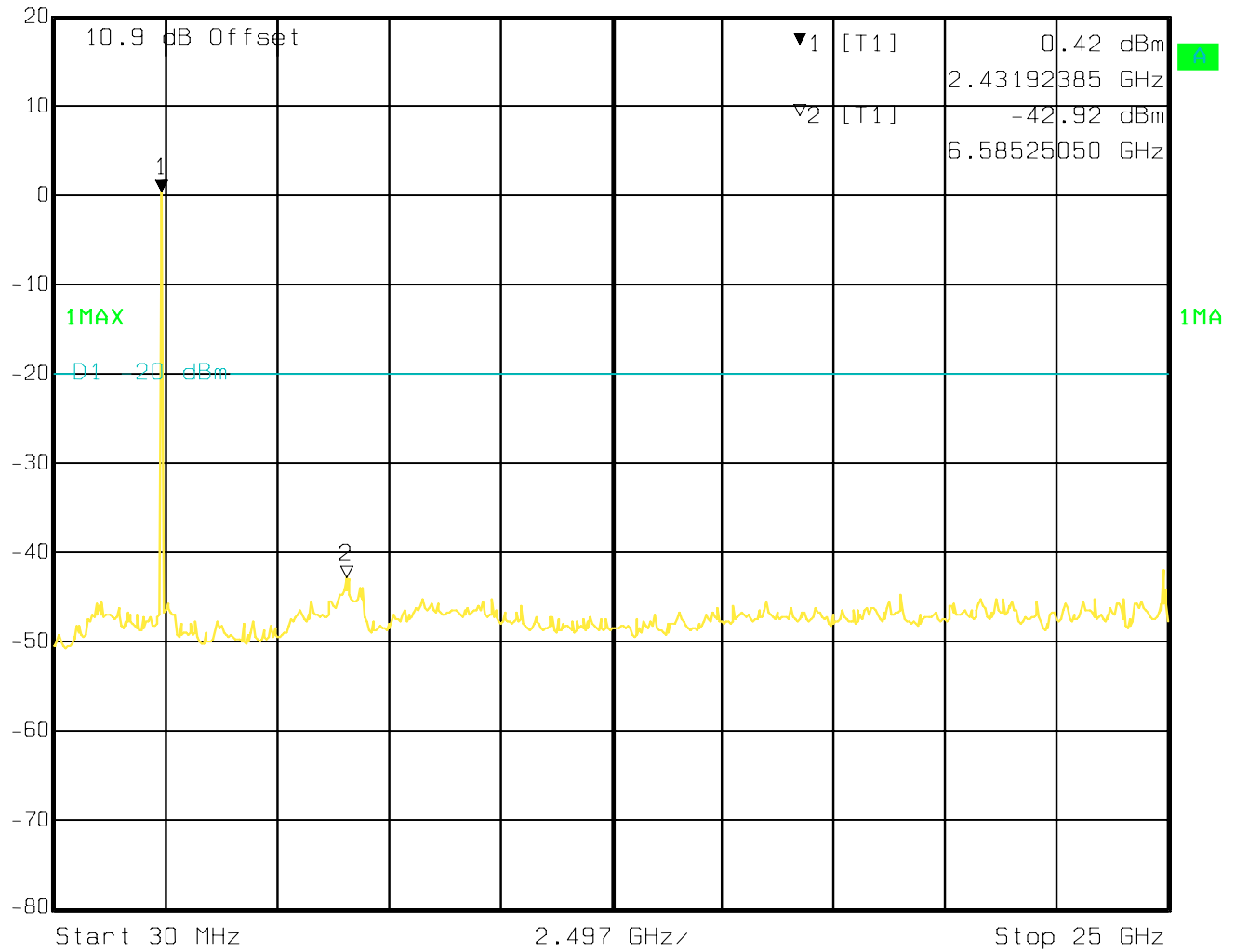
**Note: Results for Co-location represent worst case for all operating modes and channels.**

| Conducted Spurious Emissions   |                        |                 |        |
|--------------------------------|------------------------|-----------------|--------|
| Channel                        | Frequency (MHz)        | Amplitude (dBm) | Limits |
| Low                            | 2402                   | 1.46            | 30dBm  |
|                                | No critical peaks      |                 | -20dBc |
|                                |                        |                 |        |
| Mid                            | 2442                   | 0.42            | 30 dBm |
|                                | No critical peaks      |                 | -20dBc |
|                                |                        |                 |        |
| High                           | 2480                   | 0.30            | 30 dBm |
|                                | No critical peaks      |                 | -20dBc |
|                                |                        |                 |        |
| Co-Location with WLAN          | BT: 2442<br>WLAN: 2412 | 0.58            | 30 dBm |
|                                | No critical peaks      |                 | -20dBc |
|                                |                        |                 |        |
| Measurement Uncertainty: ±1 dB |                        |                 |        |

Date: 14.JAN.2010 17:25:54

**Conducted Spurious Emission 2441 MHz**

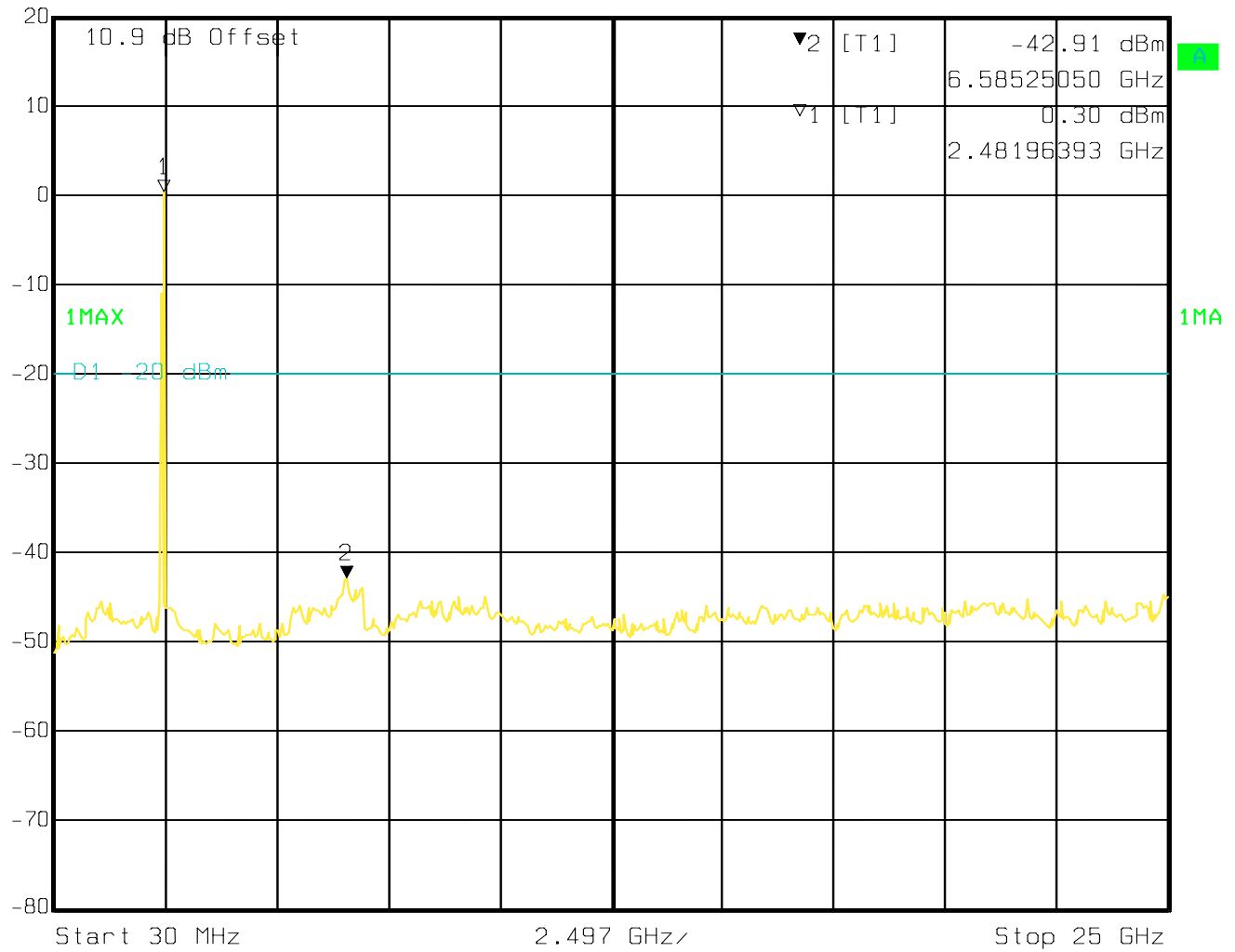

 Ref Lvl 20 dBm  
 Marker 1 [T1] 0.42 dBm  
 RBW 100 kHz RF Att 30 dB  
 VBW 300 kHz  
 2.43192385 GHz  
 SWT 6.4 s Unit dBm



Date: 14.JAN.2010 17:26:58

**Conducted Spurious Emission 2480MHz**

 Ref Lvl 20 dBm  
 Marker 2 [T1] -42.91 dBm  
 6.58525050 GHz  
 RBW 100 kHz RF Att 30 dB  
 VBW 300 kHz  
 SWT 6.4 s Unit dBm



Date: 14.JAN.2010 17:27:55

**CETECOM™**

|                                                                                   |         |                |     |         |        |       |
|-----------------------------------------------------------------------------------|---------|----------------|-----|---------|--------|-------|
|  | Ref Lvl | Marker 2 [T1]  | RBW | 100 kHz | RF Att | 30 dB |
|                                                                                   | 20 dBm  | -43.30 dBm     | VBW | 100 kHz |        |       |
|                                                                                   |         | 6.56349499 GHz | SWT | 6.4 s   | Unit   | dBm   |

Date: 22.JAN.2010 07:54:28

## 5.11 Transmitter Spurious Emissions- Radiated

### 5.11.1 Limits: §15.247/15.205

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                        | MHz                   | MHz             | GHz              |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 0.495 - 0.505 | 16.69475 - 16.69525   | 608 - 614       | 5.35 - 5.46      |
| 2.1735 - 2.1905            | 16.80425 - 16.80475   | 960 - 1240      | 7.25 - 7.75      |
| 4.125 - 4.128              | 25.5 - 25.67          | 1300 - 1427     | 8.025 - 8.5      |
| 4.17725 - 4.17775          | 37.5 - 38.25          | 1435 - 1626.5   | 9.0 - 9.2        |
| 4.20725 - 4.20775          | 73 - 74.6             | 1645.5 - 1646.5 | 9.3 - 9.5        |
| 6.215 - 6.218              | 74.8 - 75.2           | 1660 - 1710     | 10.6 - 12.7      |
| 6.26775 - 6.26825          | 108 - 121.94          | 1718.8 - 1722.2 | 13.25 - 13.4     |
| 6.31175 - 6.31225          | 123 - 138             | 2200 - 2300     | 14.47 - 14.5     |
| 8.291 - 8.294              | 149.9 - 150.05        | 2310 - 2390     | 15.35 - 16.2     |
| 8.362 - 8.366              | 156.52475 - 156.52525 | 2483.5 - 2500   | 17.7 - 21.4      |
| 8.37625 - 8.38675          | 156.7 - 156.9         | 2690 - 2900     | 22.01 - 23.12    |
| 8.41425 - 8.41475          | 162.0125 - 167.17     | 3260 - 3267     | 23.6 - 24.0      |
| 12.29 - 12.293             | 167.72 - 173.2        | 3332 - 3339     | 31.2 - 31.8      |
| 12.51975 - 12.52025        | 240 - 285             | 3345.8 - 3358   | 36.43 - 36.5     |
| 12.57675 - 12.57725        | 322 - 335.4           | 3600 - 4400     | ( <sup>2</sup> ) |
| 13.36 - 13.41              |                       |                 |                  |

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

\*PEAK LIMIT= 74dB $\mu$ V/m

\*AVG. LIMIT= 54dB $\mu$ V/m

### 5.11.2 Limits: §15.209

(For measurement distance of 3m)

| Frequency of emission (MHz) | Field strength ( $\mu$ V/m) |
|-----------------------------|-----------------------------|
| 30–88                       | 100 (40dB $\mu$ V/m)        |
| 88–216                      | 150 (43.5 dB $\mu$ V/m)     |
| 216–960                     | 200 (46 dB $\mu$ V/m)       |
| Above 960                   | 500 (54 dB $\mu$ V/m)       |

**NOTE:**

1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in Peak mode using an Average limit, unless specified within the plots.

**5.11.3 Limits: §15.209**

| Frequency of emission (MHz) | Field strength ( $\mu\text{V/m}$ ) | Measurement Distance (m) |
|-----------------------------|------------------------------------|--------------------------|
| 0.009–0.490                 | 2400/F(kHz)                        | 300                      |
| 0.490–1.705                 | 24000/F(kHz)                       | 30                       |
| 1.705–30.0                  | 30                                 | 30                       |

**5.11.4 Test Result:**

No significant emissions measurable. Measurements were made in GFSK mode. Plots reported here represent the worse case emissions for all modulations.

Plots for co-location represents worst case for all operating modes, channels, and configurations.

**5.11.5 Test data/ plots – Standard Cover with AC Adapter #30:**  
**30MHz – 1GHz: Low Channel**

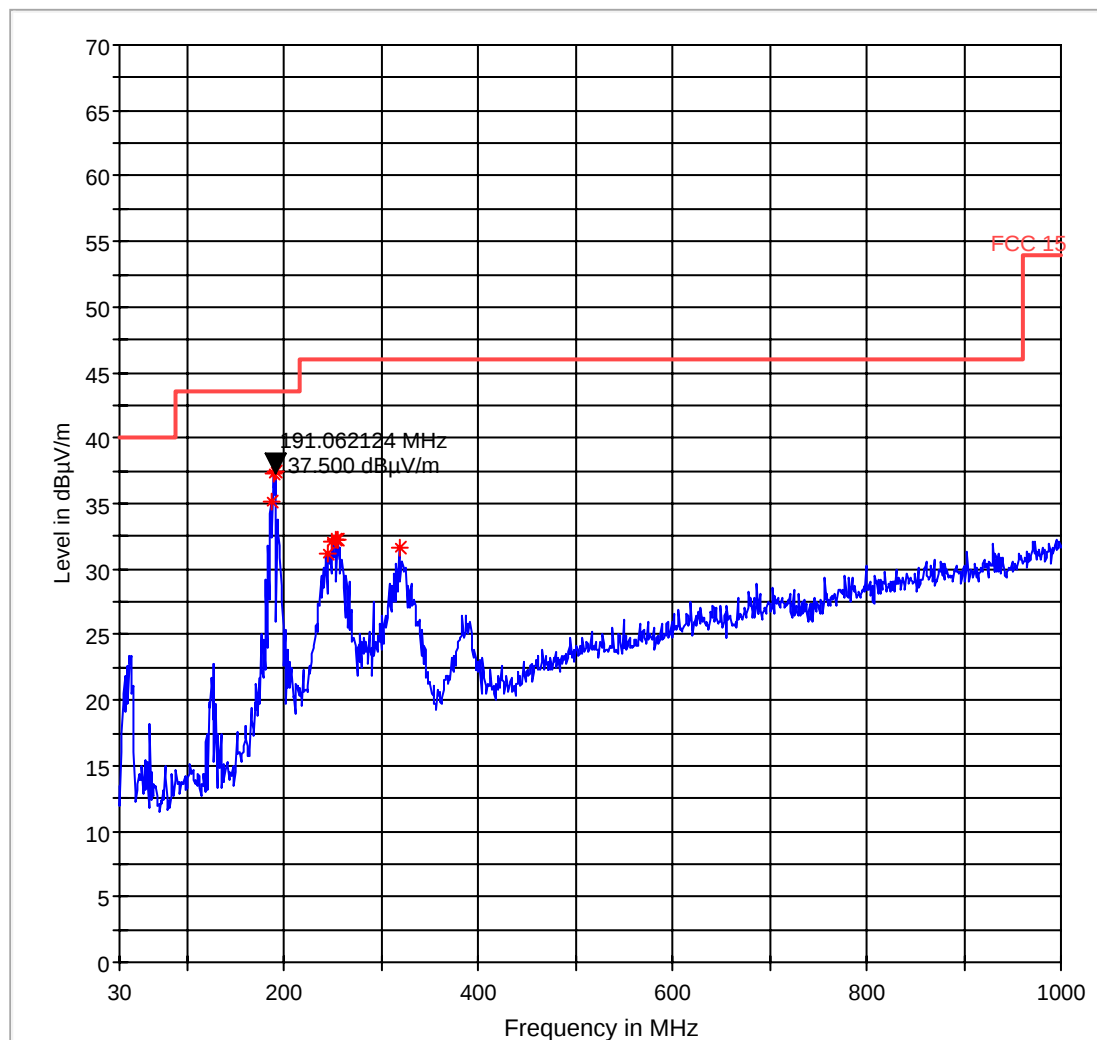
**Standard CH 0**

**EUT Information**

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | BT SAMPLE                         |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       | GFSK DH5 CH 0                     |

FCC 15 30-1000MHz



— FCC 15.LimitLine — Preview Result 1 \* Data Reduction 1 [1]

30MHz – 1GHz: Mid Channel

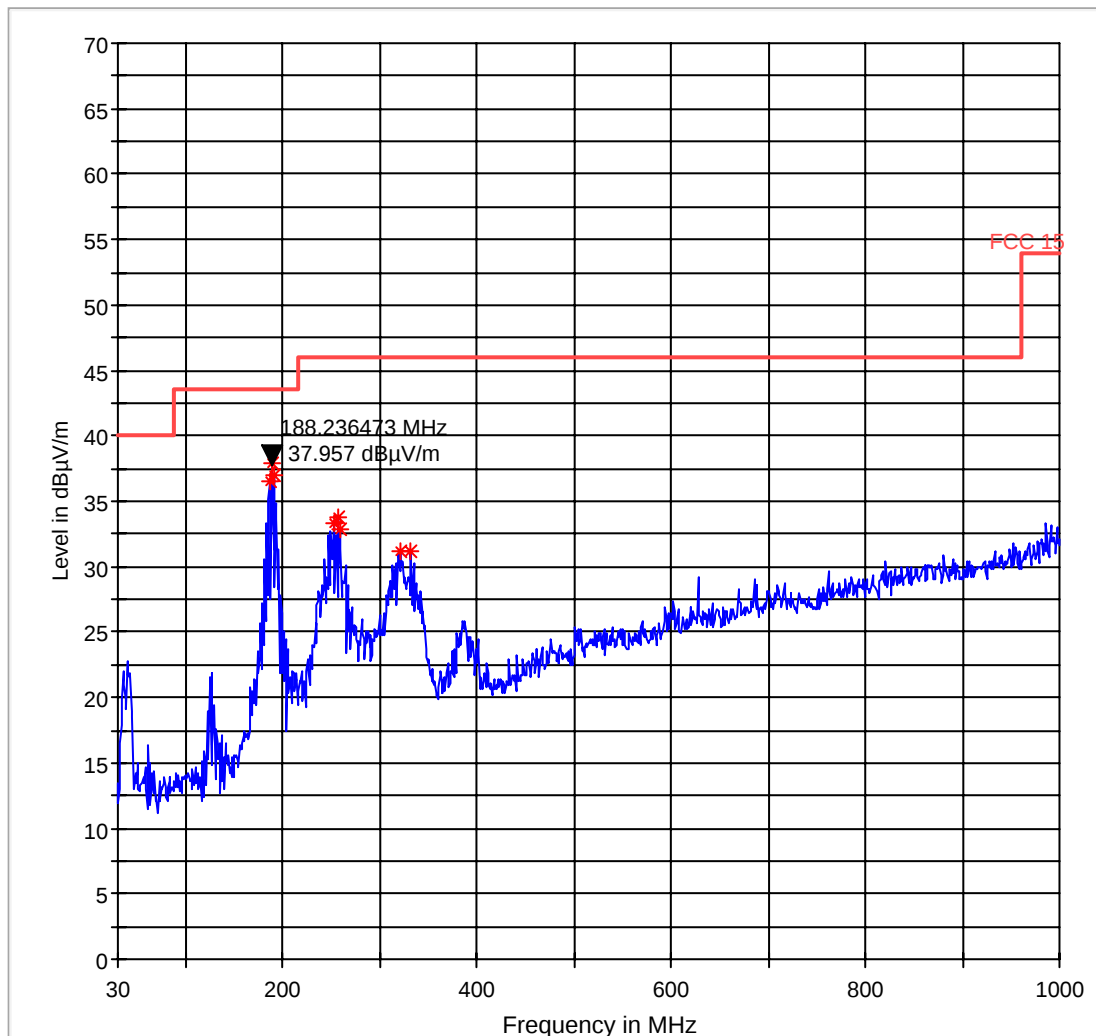
## Standard CH 39

### EUT Information

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | BT SAMPLE                         |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       | GFSK DH5 CH 39                    |

FCC 15 30-1000MHz



**30MHz – 1GHz: High Channel**

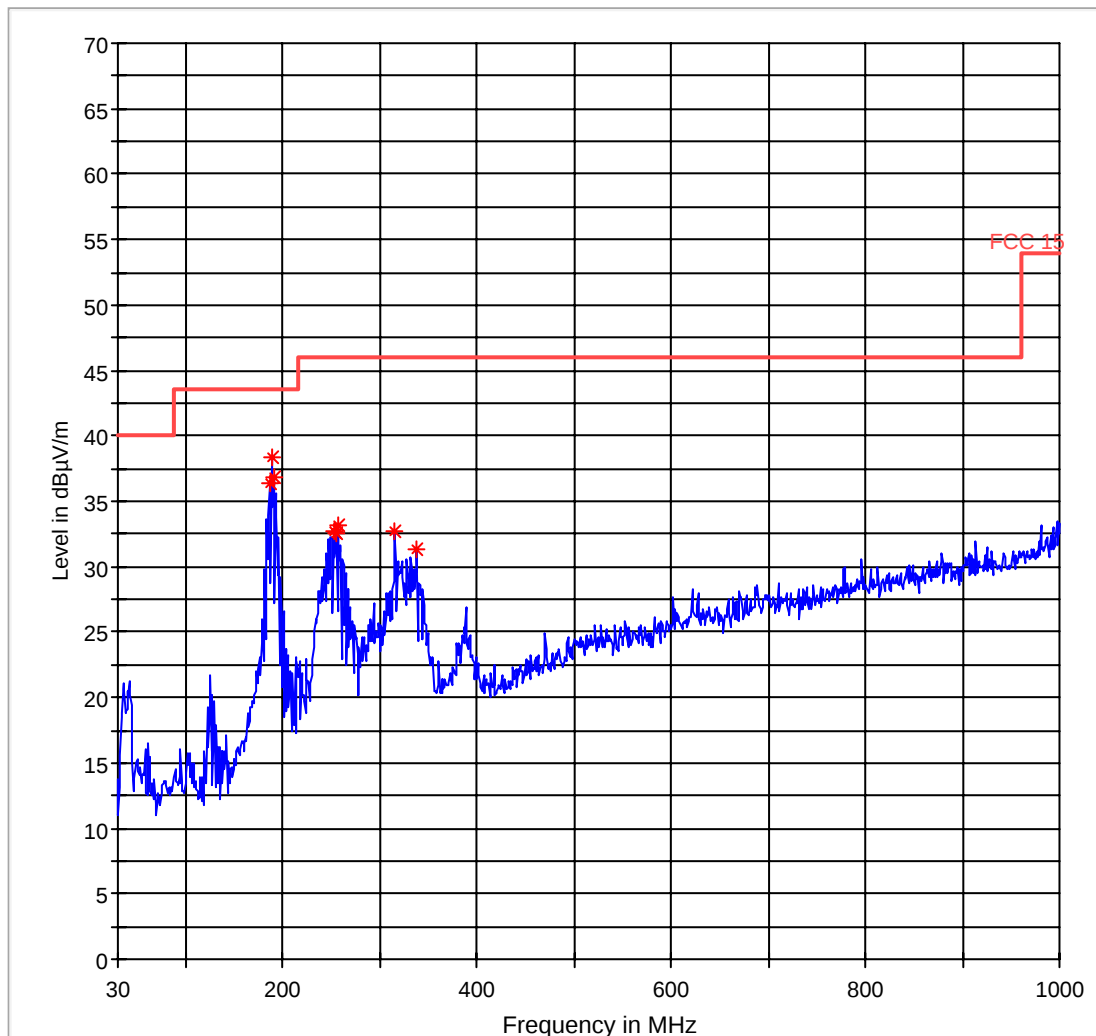
## Standard CH 78

### EUT Information

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | BT SAMPLE                         |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       | GFSK DH5 CH 78                    |

FCC 15 30-1000MHz



— FCC 15.LimitLine — Preview Result 1 \* Data Reduction 1 [1]

1GHz – 18GHz: Low Channel

EMI Auto Test(1)

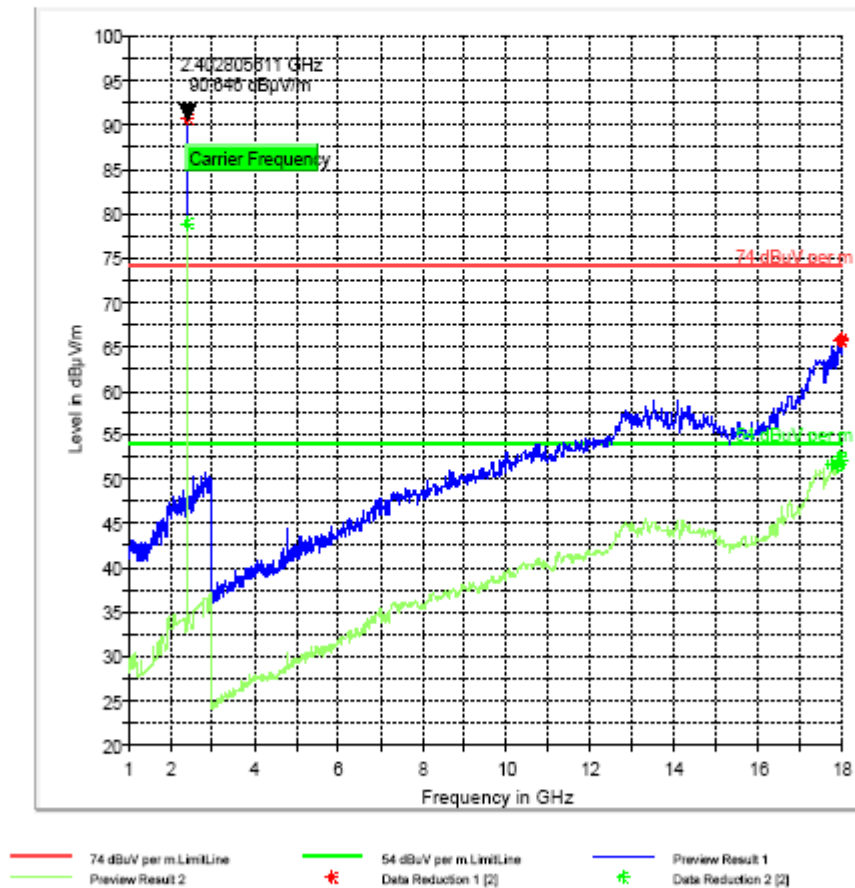
1 / 1

## EMI Auto Test(1)

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (FCC 15.247 Sample)  
Configuration: Standard Cover and AC adapter #30  
Comment:

FCC 15 1-18GHz



**1GHz – 18GHz: Mid Channel**

Ch 2

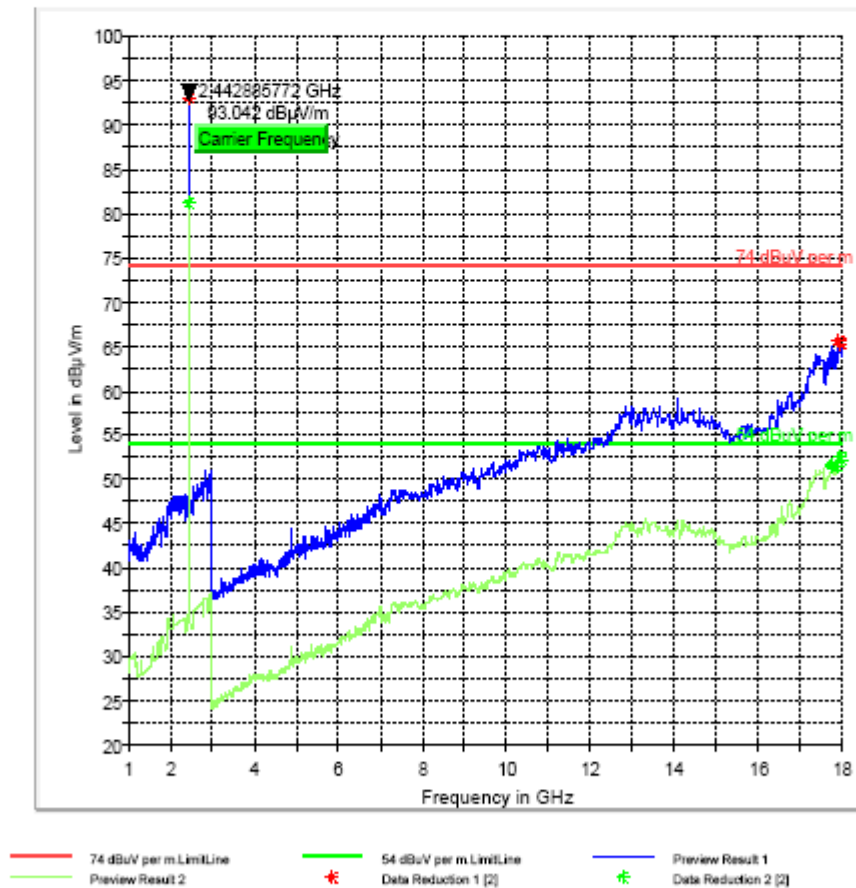
1 / 1

## Ch 2

### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: PD2BNBR98020  
Configuration: Standard Cover and AC adapter #30  
Comment:

FCC 15 1-18GHz



**1GHz – 18GHz: High Channel**

Ch 3

1 / 1

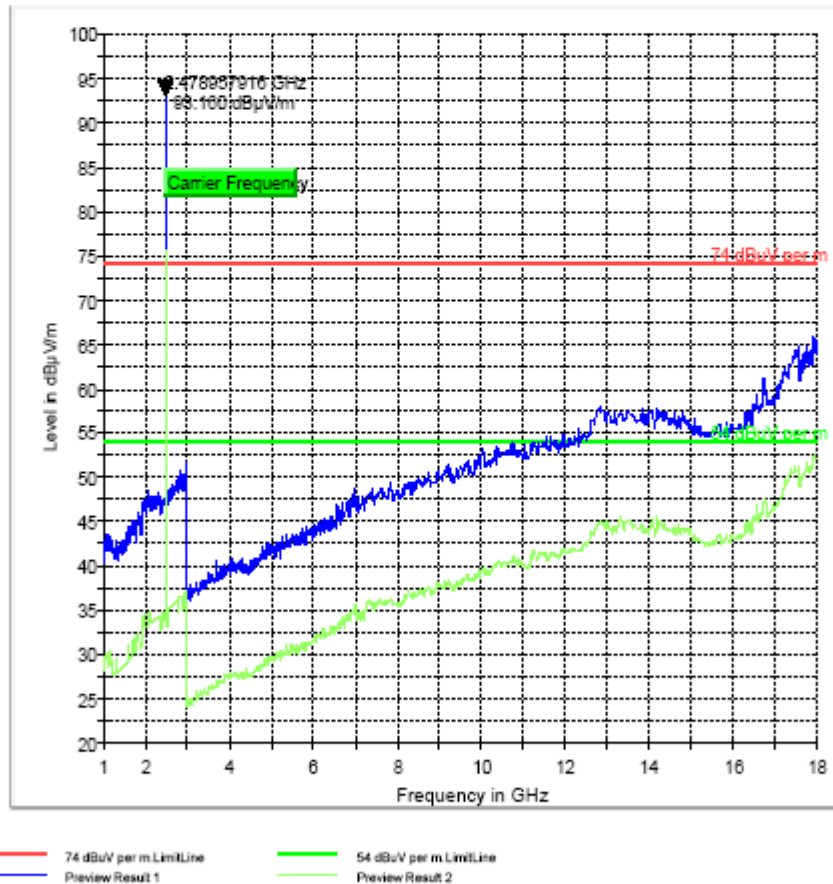
## Ch 3

### EUT Information

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | (FCC 15.247 Sample)               |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       |                                   |

FCC 15 1-18GHz



**18GHz – 26GHz: Low Channel**

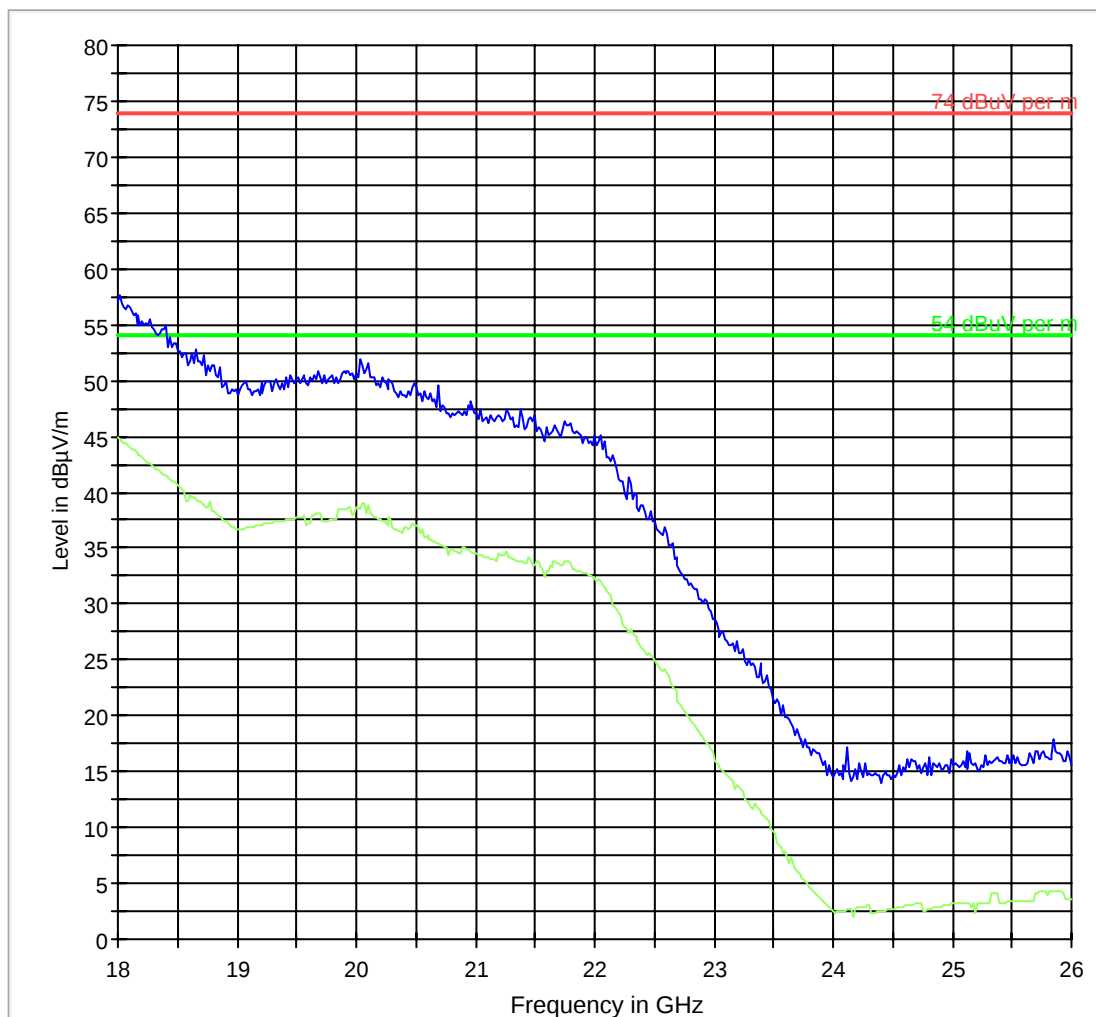
## Standard CH 0

### EUT Information

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | BT SAMPLE                         |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       | GFSK DH5 CH 0                     |

FCC 15 18-26GHz



|                         |                         |
|-------------------------|-------------------------|
| 74 dBuV per m.LimitLine | 54 dBuV per m.LimitLine |
| Preview Result 1        | Preview Result 2        |

**18GHz – 26GHz: Mid Channel**

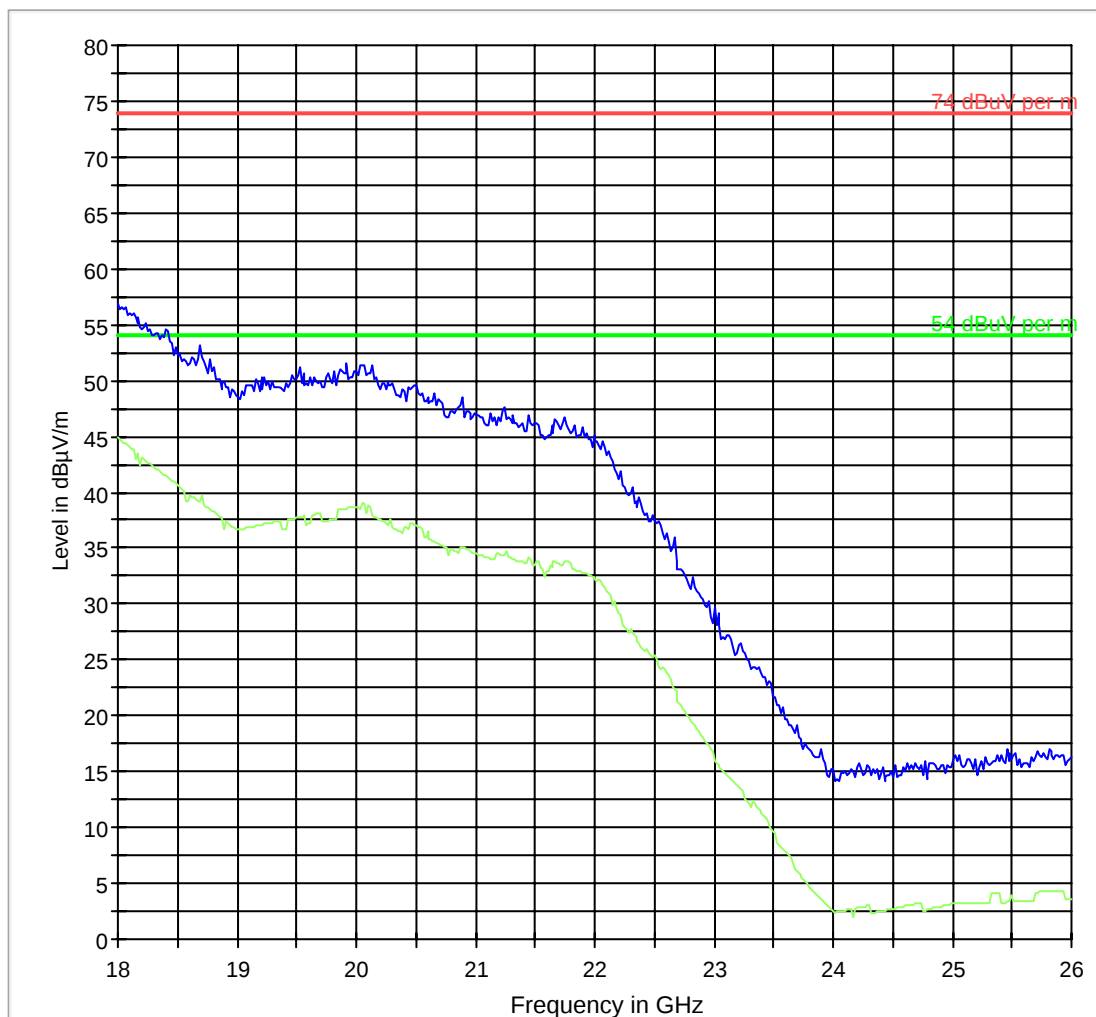
## Standard CH 39

### EUT Information

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | BT SAMPLE                         |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       | GFSK DH5 CH 39                    |

FCC 15 18-26GHz



|                         |                         |
|-------------------------|-------------------------|
| 74 dBuV per m.LimitLine | 54 dBuV per m.LimitLine |
| Preview Result 1        | Preview Result 2        |

**18GHz – 26GHz: High Channel**

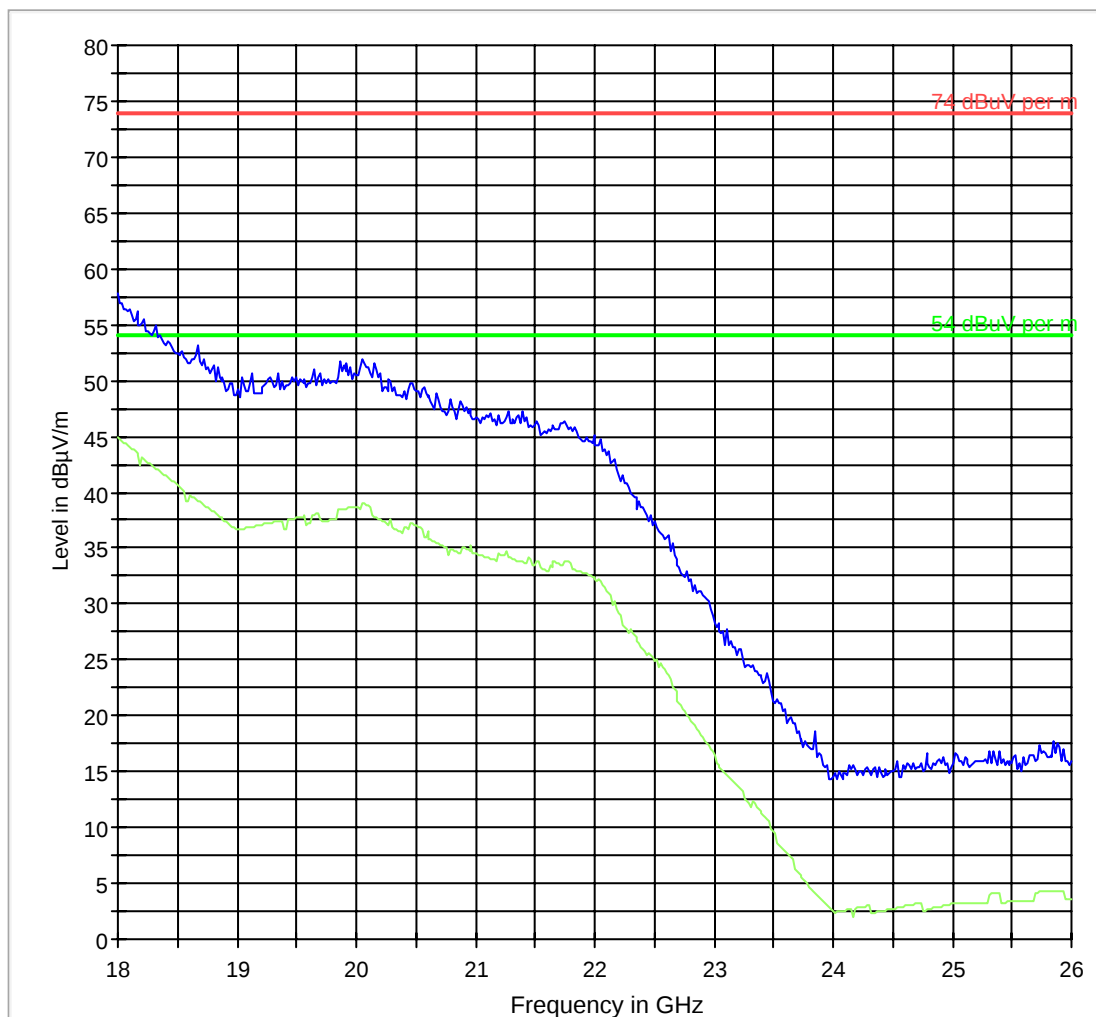
## Standard CH 78

### EUT Information

Description:

|                |                                   |
|----------------|-----------------------------------|
| EUT Name:      | GSM/UMTS Phone                    |
| Manufacturer:  | Palm                              |
| Serial Number: | BT SAMPLE                         |
| Configuration: | Standard Cover and AC adapter #30 |
| Comment:       | GFSK DH5 CH 78                    |

FCC 15 18-26GHz



|                         |                         |
|-------------------------|-------------------------|
| 74 dBuV per m.LimitLine | 54 dBuV per m.LimitLine |
| Preview Result 1        | Preview Result 2        |

**5.11.6 Test data/ plots – Inductive cover with inductive dock and AC Adapter #30:**  
**30MHz – 1GHz: Low Channel**

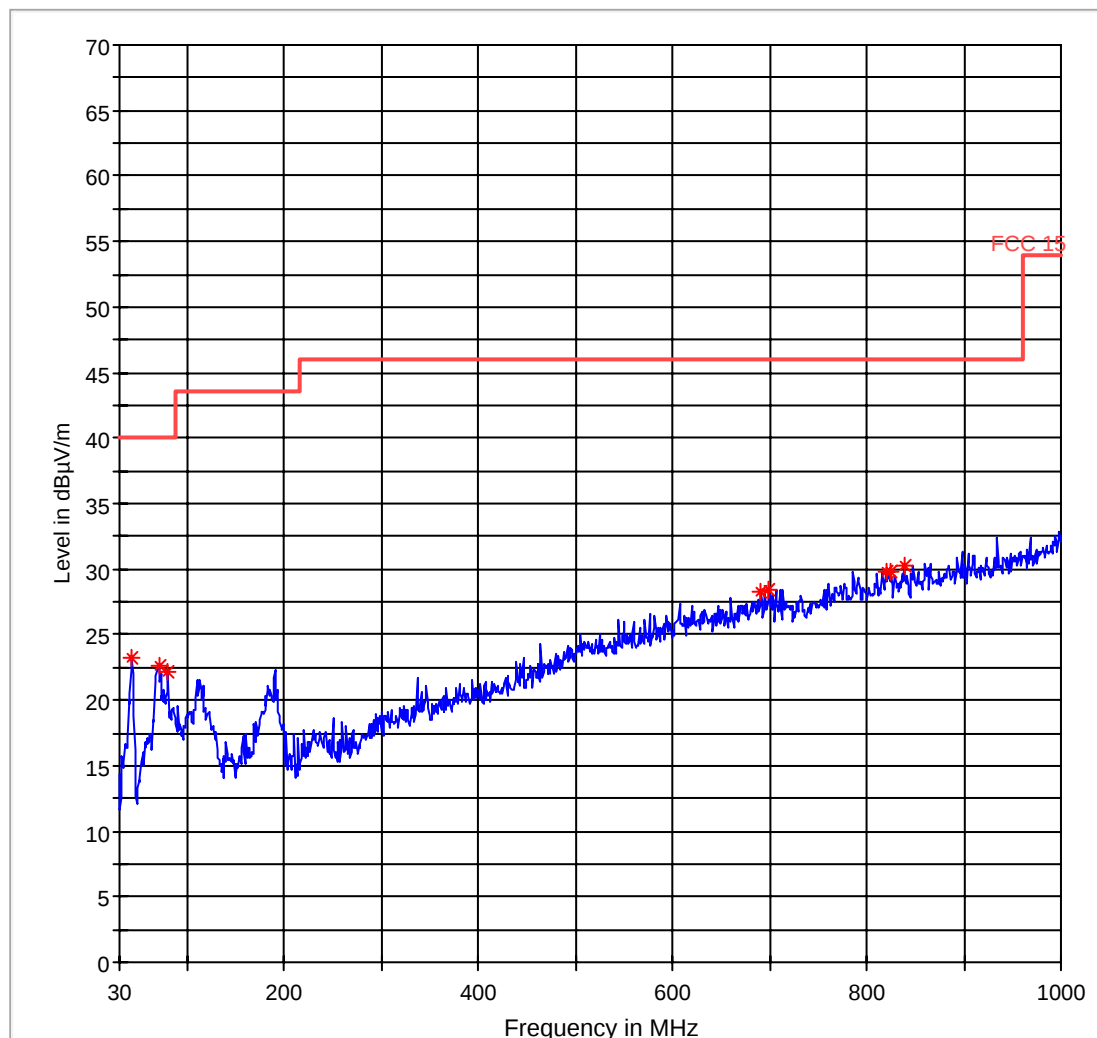
**Inductive CH 0**

**EUT Information**

Description:

|                |                                           |
|----------------|-------------------------------------------|
| EUT Name:      | GSM/UMTS Phone                            |
| Manufacturer:  | Palm                                      |
| Serial Number: | BT SAMPLE                                 |
| Configuration: | Inductive Cover w dock and AC adapter #30 |
| Comment:       | GFSK DH5 CH 0                             |

FCC 15 30-1000MHz



— FCC 15.LimitLine — Preview Result 1 \* Data Reduction 1 [1]

30MHz – 1GHz: Mid Channel

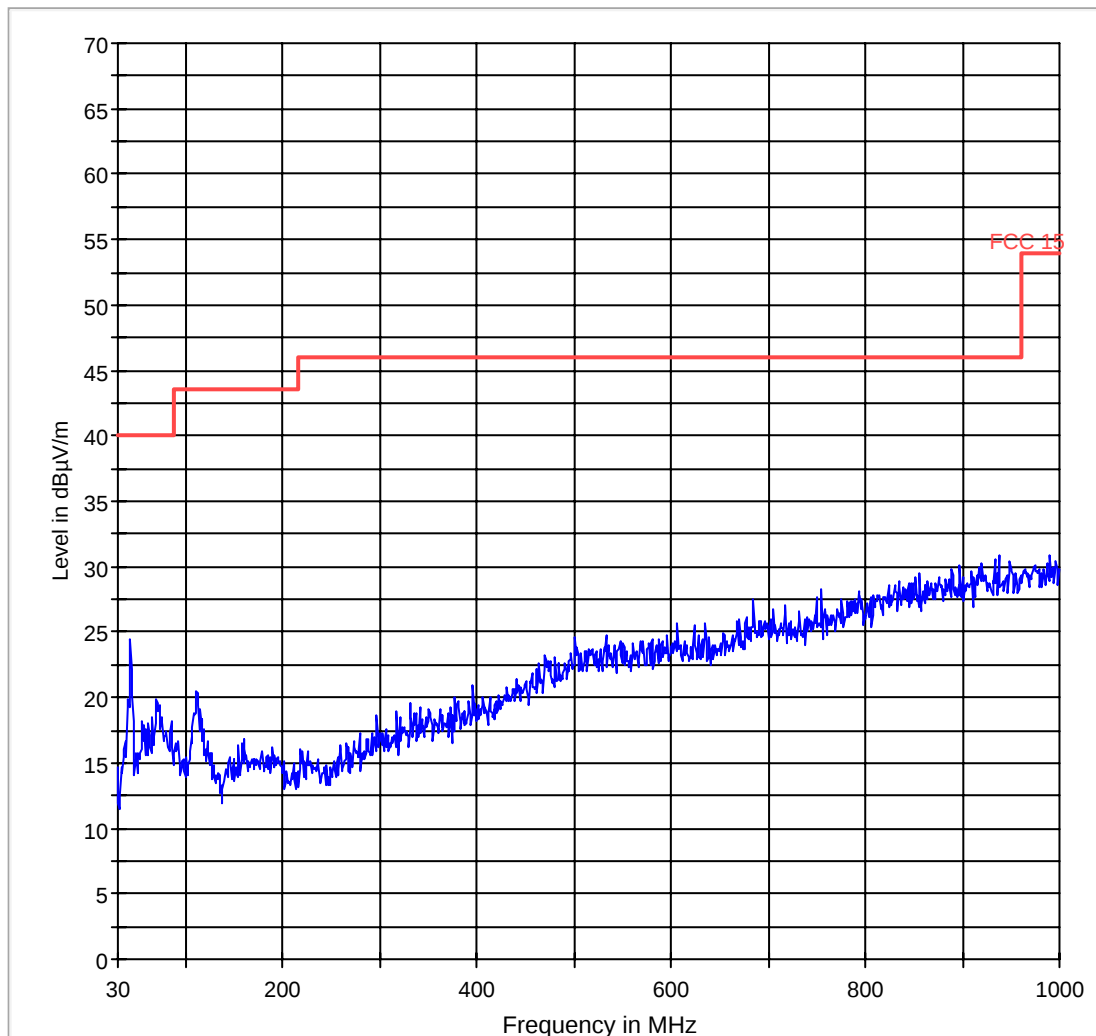
## Inductive CH 39

### EUT Information

Description:

|                |                                           |
|----------------|-------------------------------------------|
| EUT Name:      | GSM/UMTS Phone                            |
| Manufacturer:  | Palm                                      |
| Serial Number: | BT SAMPLE                                 |
| Configuration: | Inductive Cover w dock and AC adapter #30 |
| Comment:       | GFSK DH5 CH 39                            |

FCC 15 30-1000MHz



— FCC 15.LimitLine

— Preview Result 1

30MHz – 1GHz: High Channel

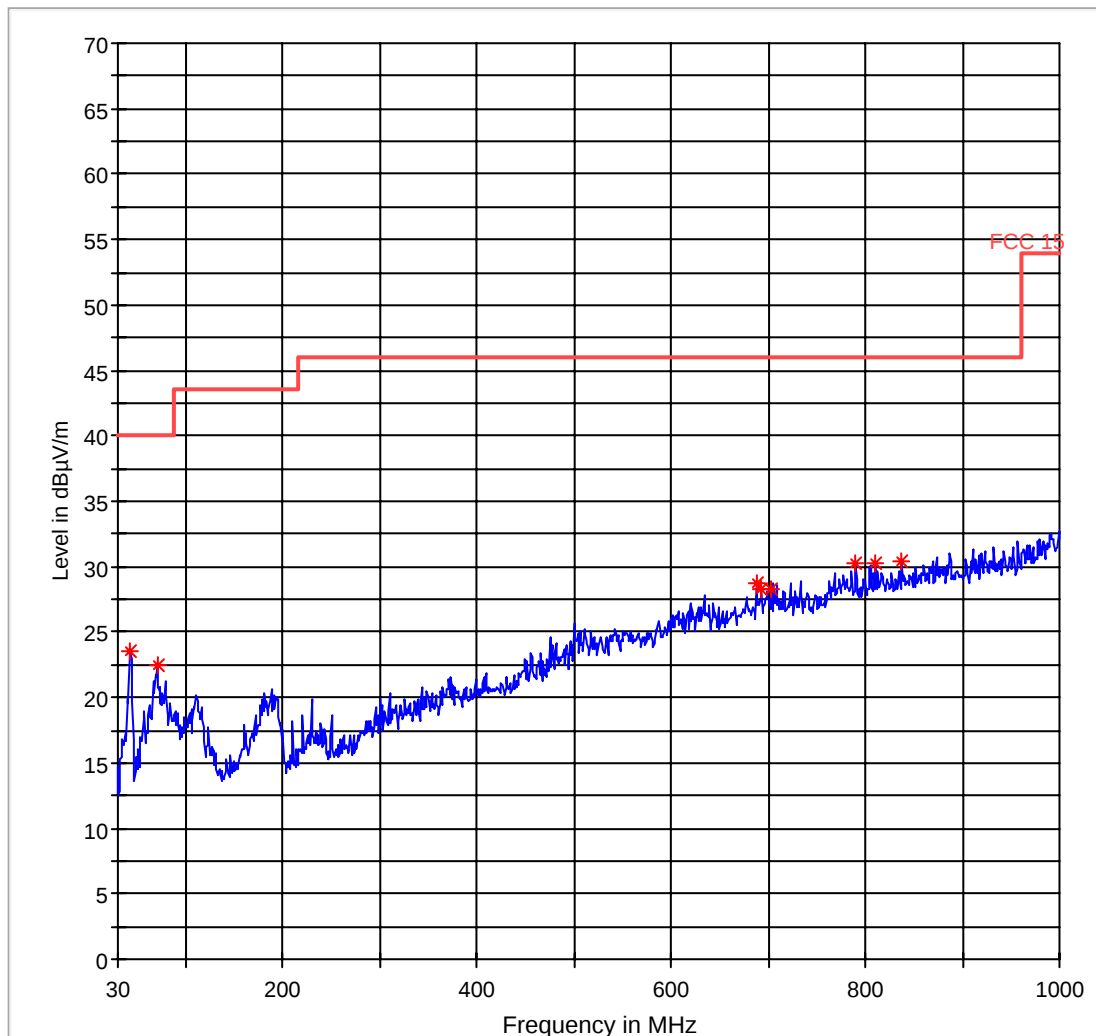
## Inductive CH 78

### EUT Information

Description:

|                |                                           |
|----------------|-------------------------------------------|
| EUT Name:      | GSM/UMTS Phone                            |
| Manufacturer:  | Palm                                      |
| Serial Number: | BT SAMPLE                                 |
| Configuration: | Inductive Cover w dock and AC adapter #30 |
| Comment:       | GFSK DH5 CH 78                            |

FCC 15 30-1000MHz



— FCC 15.LimitLine — Preview Result 1 \* Data Reduction 1 [1]

**1GHz – 18GHz: Low Channel**

CH1

1 / 1

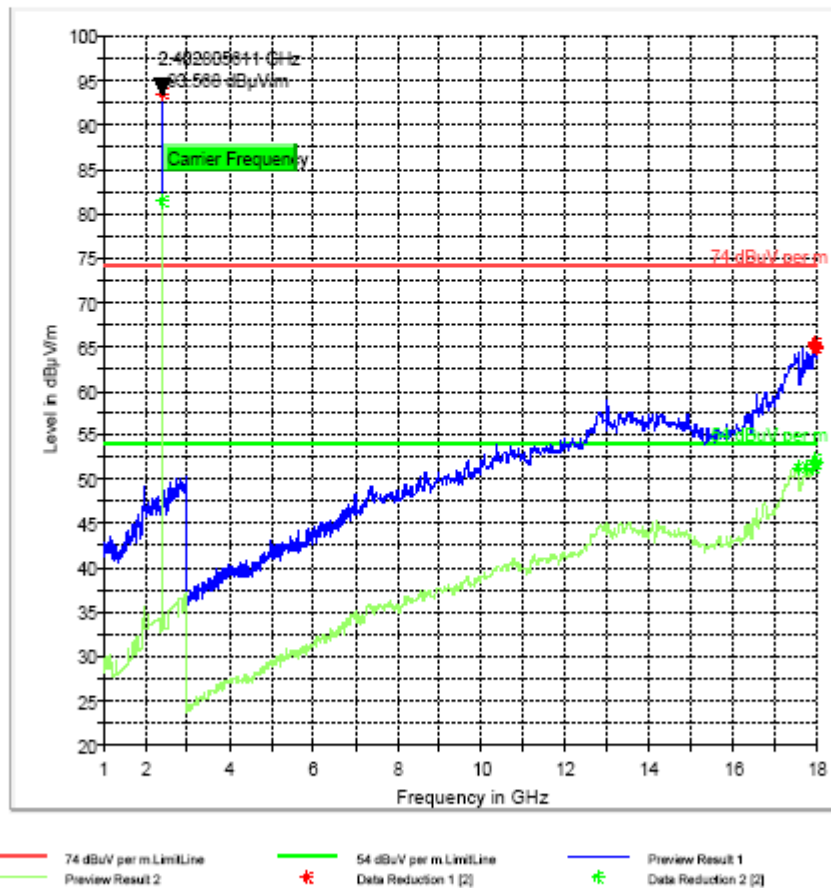
## CH1

### EUT Information

Description:

|                |                                                       |
|----------------|-------------------------------------------------------|
| EUT Name:      | GSM/UMTS Phone                                        |
| Manufacturer:  | Palm                                                  |
| Serial Number: | (FCC 15.247 Sample)                                   |
| Configuration: | Inductive Cover and AC adapter #30 and Inductive Dock |
| Comment:       |                                                       |

FCC 15 1-18GHz



**1GHz – 18GHz: Mid Channel**

CH2

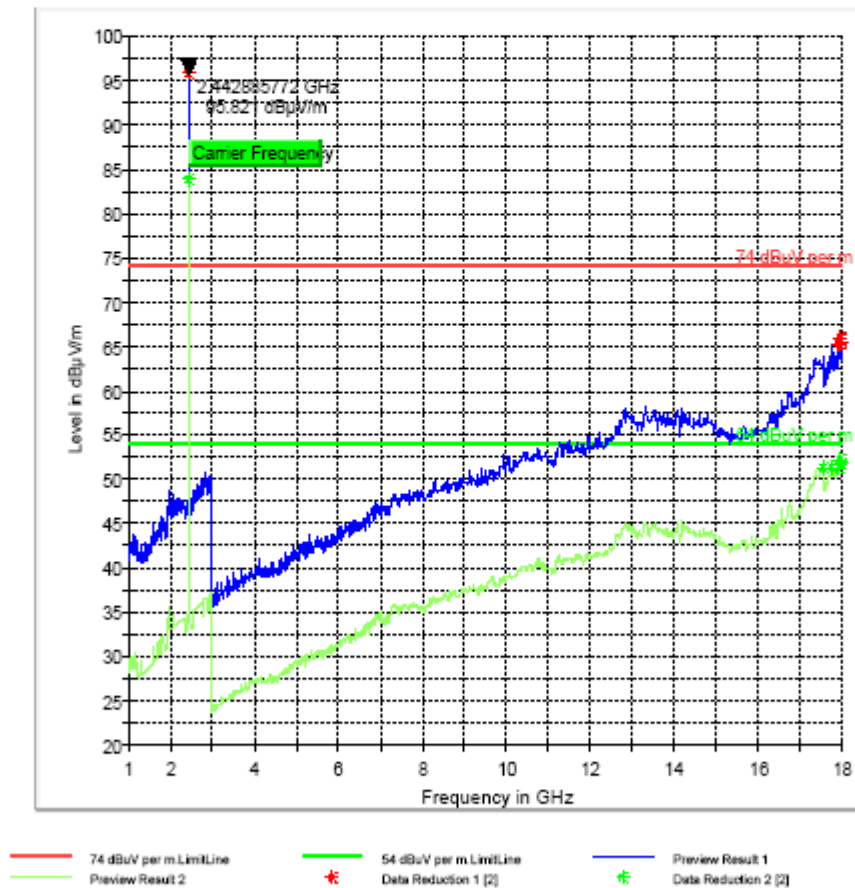
1 / 1

**CH2**

**EUT Information**

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (FCC 15.247 Sample)  
Configuration: Inductive Cover and AC adapter #30 and Inductive Dock  
Comment:

FCC 15 1-18GHz



**1GHz – 18GHz: High Channel**

CH3

1 / 1

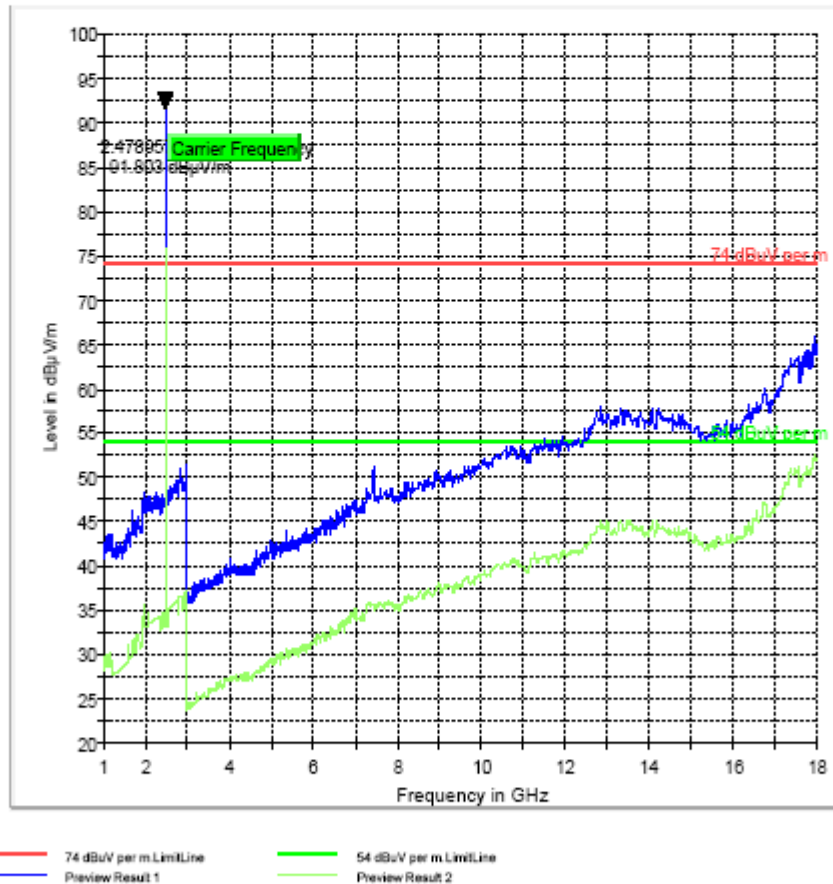
## CH3

### EUT Information

Description:

|                |                                                       |
|----------------|-------------------------------------------------------|
| EUT Name:      | GSM/UMTS Phone                                        |
| Manufacturer:  | Palm                                                  |
| Serial Number: | (FCC 15.247 Sample)                                   |
| Configuration: | Inductive Cover and AC adapter #30 and Inductive Dock |
| Comment:       |                                                       |

FCC 15 1-18GHz



**18GHz – 26GHz: Low Channel**

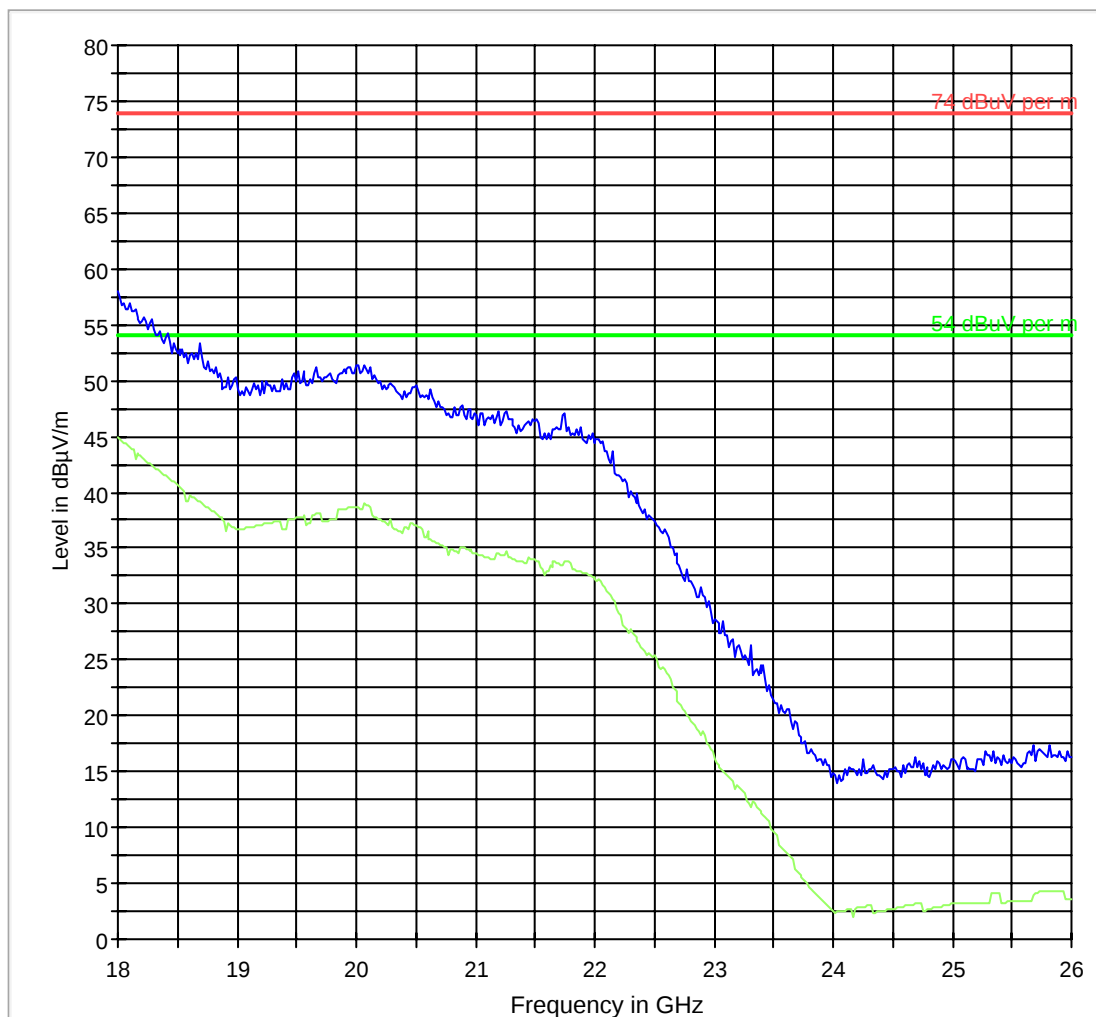
## Inductive CH 0

### EUT Information

Description:

|                |                                           |
|----------------|-------------------------------------------|
| EUT Name:      | GSM/UMTS Phone                            |
| Manufacturer:  | Palm                                      |
| Serial Number: | BT SAMPLE                                 |
| Configuration: | Inductive Cover w dock and AC adapter #30 |
| Comment:       | GFSK DH5 CH 0                             |

FCC 15 18-26GHz



|                         |                         |
|-------------------------|-------------------------|
| 74 dBuV per m.LimitLine | 54 dBuV per m.LimitLine |
| Preview Result 1        | Preview Result 2        |

18GHz – 26GHz: Mid Channel

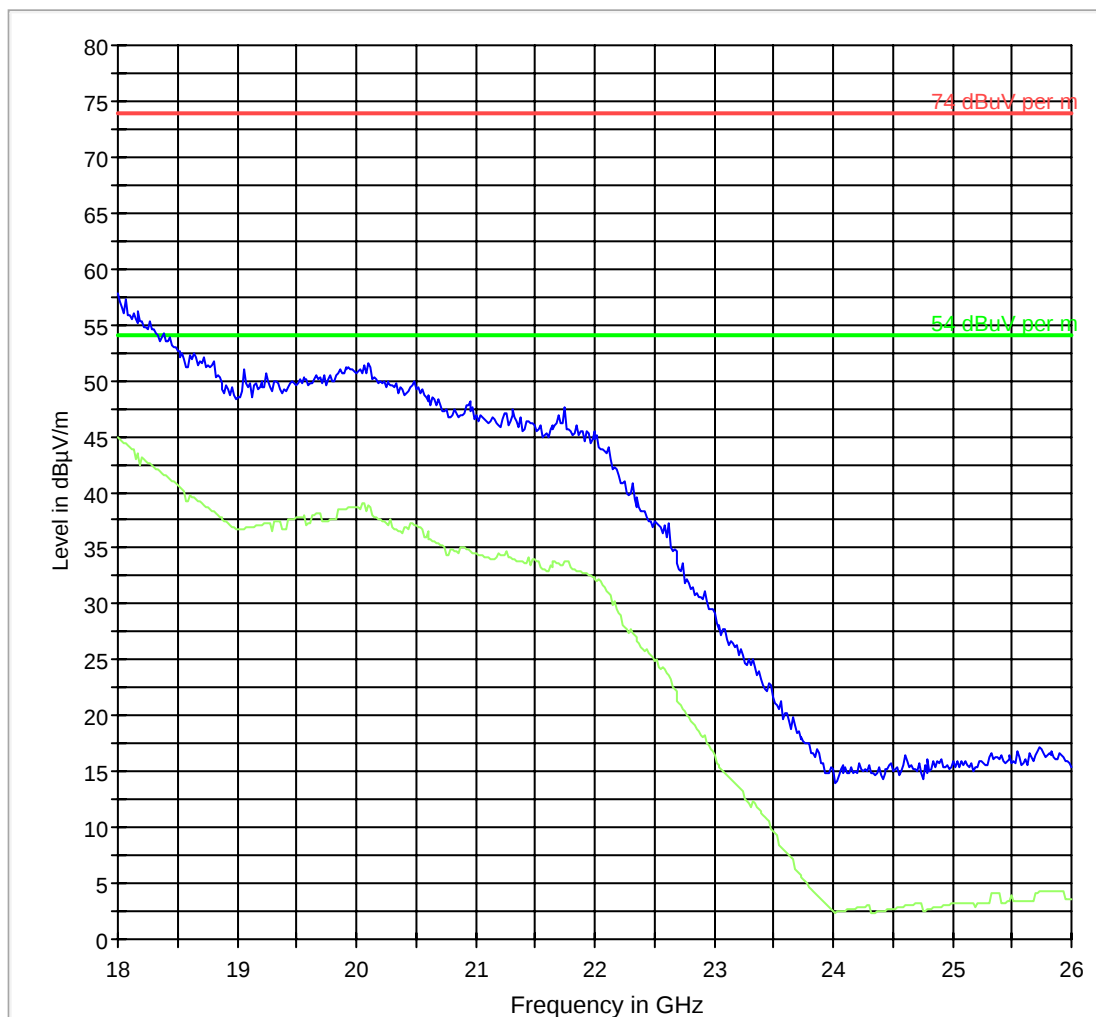
## Inductive CH 39

### EUT Information

Description:

|                |                                           |
|----------------|-------------------------------------------|
| EUT Name:      | GSM/UMTS Phone                            |
| Manufacturer:  | Palm                                      |
| Serial Number: | BT SAMPLE                                 |
| Configuration: | Inductive Cover w dock and AC adapter #30 |
| Comment:       | GFSK DH5 CH 39                            |

FCC 15 18-26GHz



|                           |                           |
|---------------------------|---------------------------|
| — 74 dBuV per m.LimitLine | — 54 dBuV per m.LimitLine |
| — Preview Result 1        | — Preview Result 2        |

18GHz – 26GHz: High Channel

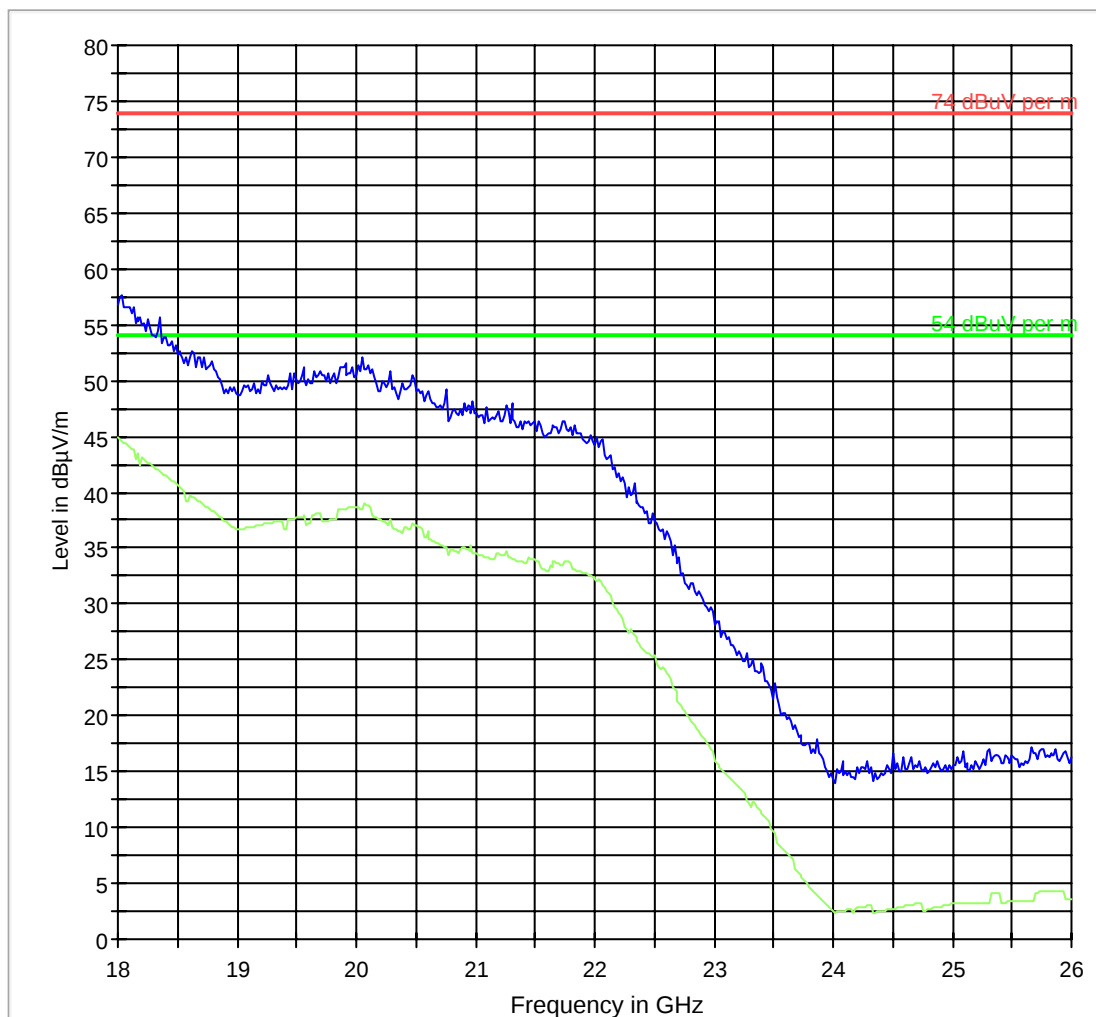
## Inductive CH 78

### EUT Information

Description:

|                |                                           |
|----------------|-------------------------------------------|
| EUT Name:      | GSM/UMTS Phone                            |
| Manufacturer:  | Palm                                      |
| Serial Number: | BT SAMPLE                                 |
| Configuration: | Inductive Cover w dock and AC adapter #30 |
| Comment:       | GFSK DH5 CH 78                            |

FCC 15 18-26GHz



**5.11.7 Test data/ plots – Co-location: Inductive cover with inductive dock and AC Adapter #30:**

**NOTE: Plots represent worst case of all operating modes and configurations**

**30MHz – 1GHz: BT 2442MHz, WLAN 2412 MHz**

30-1

1 / 1

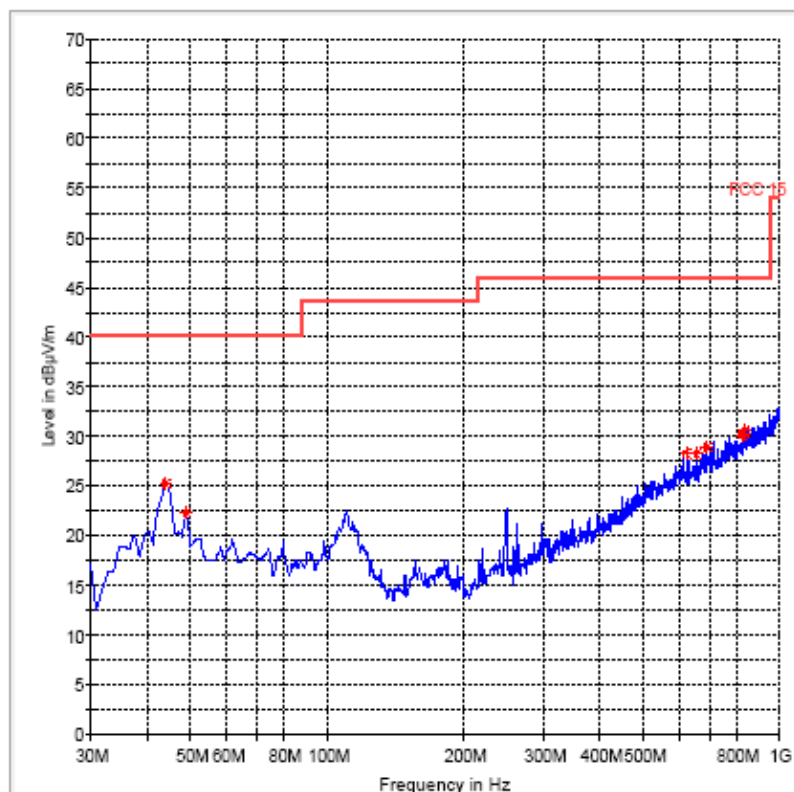
## 30-1

### EUT Information

Description:

|                |                                                        |
|----------------|--------------------------------------------------------|
| EUT Name:      | GSM/UMTS Phone                                         |
| Manufacturer:  | Palm                                                   |
| Serial Number: | GSM/UMTS SAMPLE                                        |
| Configuration: | Inductive Cover with Inductive Dock and AC adapter #30 |
| Comment:       | Co-location                                            |

FCC 15 30-1000MHz



— FCC 15 Limit Line — Preview Result 1 \* Data Reduction 1 [1]

1Hz – 18GHz: BT 2442MHz, WLAN 2412 MHz

1-18

1 / 1

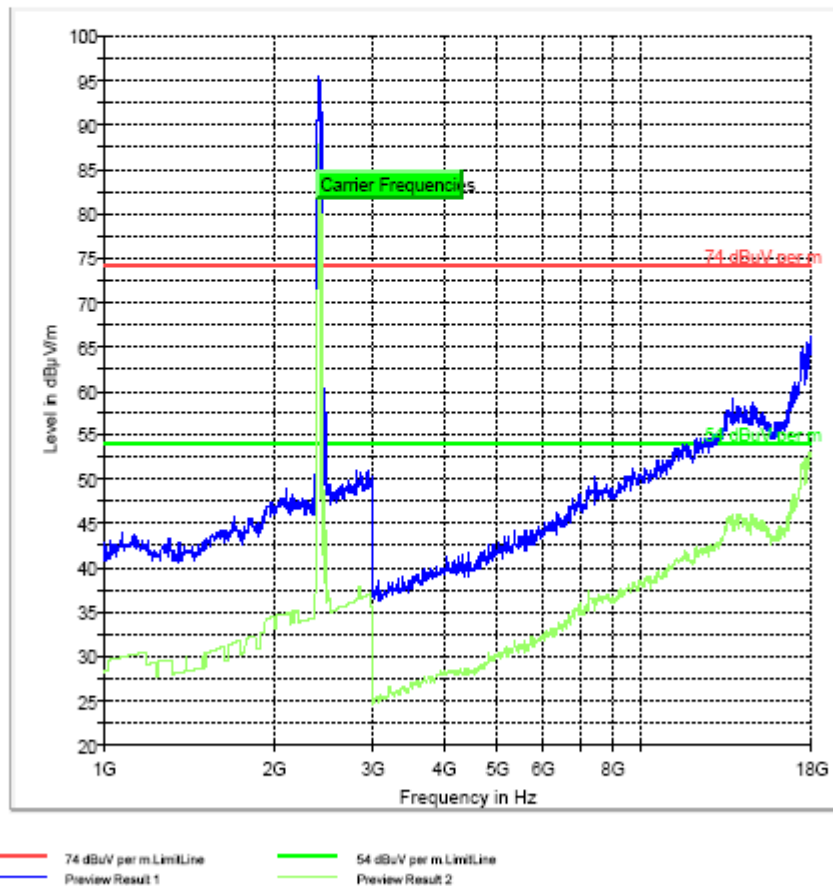
## 1-18

### EUT Information

Description:

|                |                                                        |
|----------------|--------------------------------------------------------|
| EUT Name:      | GSM/UMTS Phone                                         |
| Manufacturer:  | Palm                                                   |
| Serial Number: | (FCC 15.247 Sample)                                    |
| Configuration: | Inductive Cover with Inductive Dock and AC adapter #30 |
| Comment:       | Co-location                                            |

FCC 15 1-18GHz



18GHz – 26GHz: BT 2442MHz, WLAN 2412 MHz

EMI Auto Test(1)

1 / 1

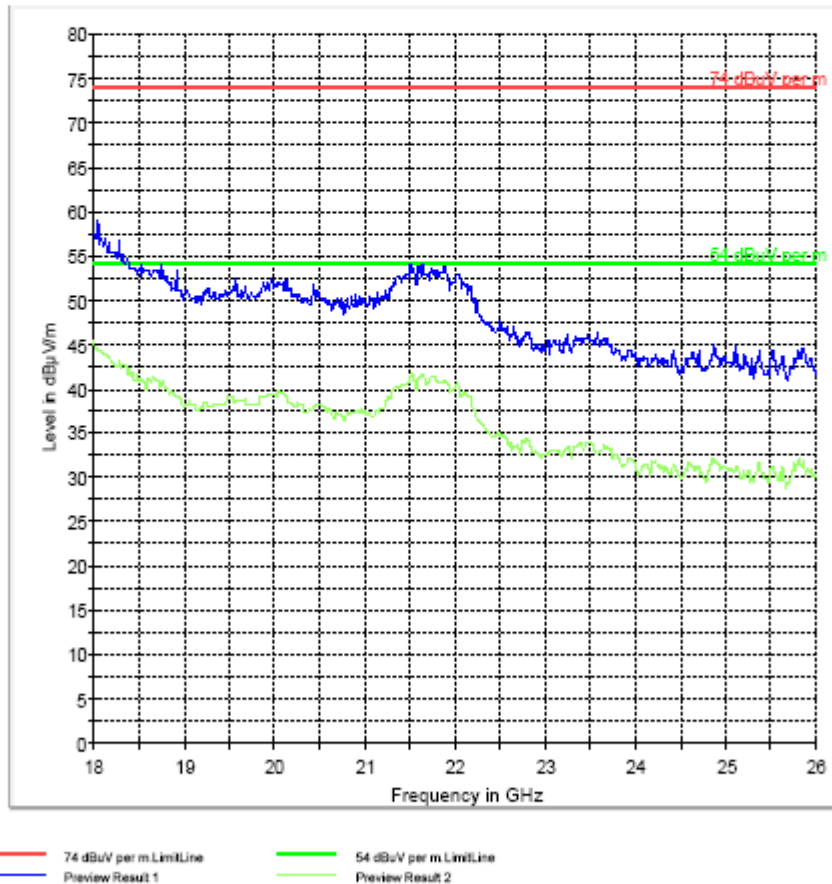
## EMI Auto Test(1)

### EUT Information

Description:

|                |                                                        |
|----------------|--------------------------------------------------------|
| EUT Name:      | GSM/UMTS Phone                                         |
| Manufacturer:  | Palm                                                   |
| Serial Number: | GSM/UMTS SAMPLE                                        |
| Configuration: | Inductive Cover with Inductive Dock and AC adapter #30 |
| Comment:       | Co-location                                            |

FCC 15 18-26GHz



## 5.12 Receiver Spurious Emissions- Radiated

### 5.12.1 Limits: §15.109

| Frequency of emission (MHz) | Field strength ( $\mu\text{V/m}$ ) | Measurement Distance (m) |
|-----------------------------|------------------------------------|--------------------------|
| 0.009–0.490                 | 2400/F(kHz)                        | 300                      |
| 0.490–1.705                 | 24000/F(kHz)                       | 30                       |
| 1.705–30.0                  | 30                                 | 30                       |
| 30–88                       | 100 (40dB $\mu\text{V/m}$ )        | 3                        |
| 88–216                      | 150 (43.5 dB $\mu\text{V/m}$ )     | 3                        |
| 216–960                     | 200 (46 dB $\mu\text{V/m}$ )       | 3                        |
| Above 960                   | 500 (54 dB $\mu\text{V/m}$ )       | 3                        |

### 5.12.2 Test Conditions:

Modulation: GFSK

### 5.12.3 Test Result:

No significant emissions measurable. Plots reported here represent the worse case emissions for all modulations.

#### 5.12.4 Test data/ plots:

## EMI Auto Test(1)

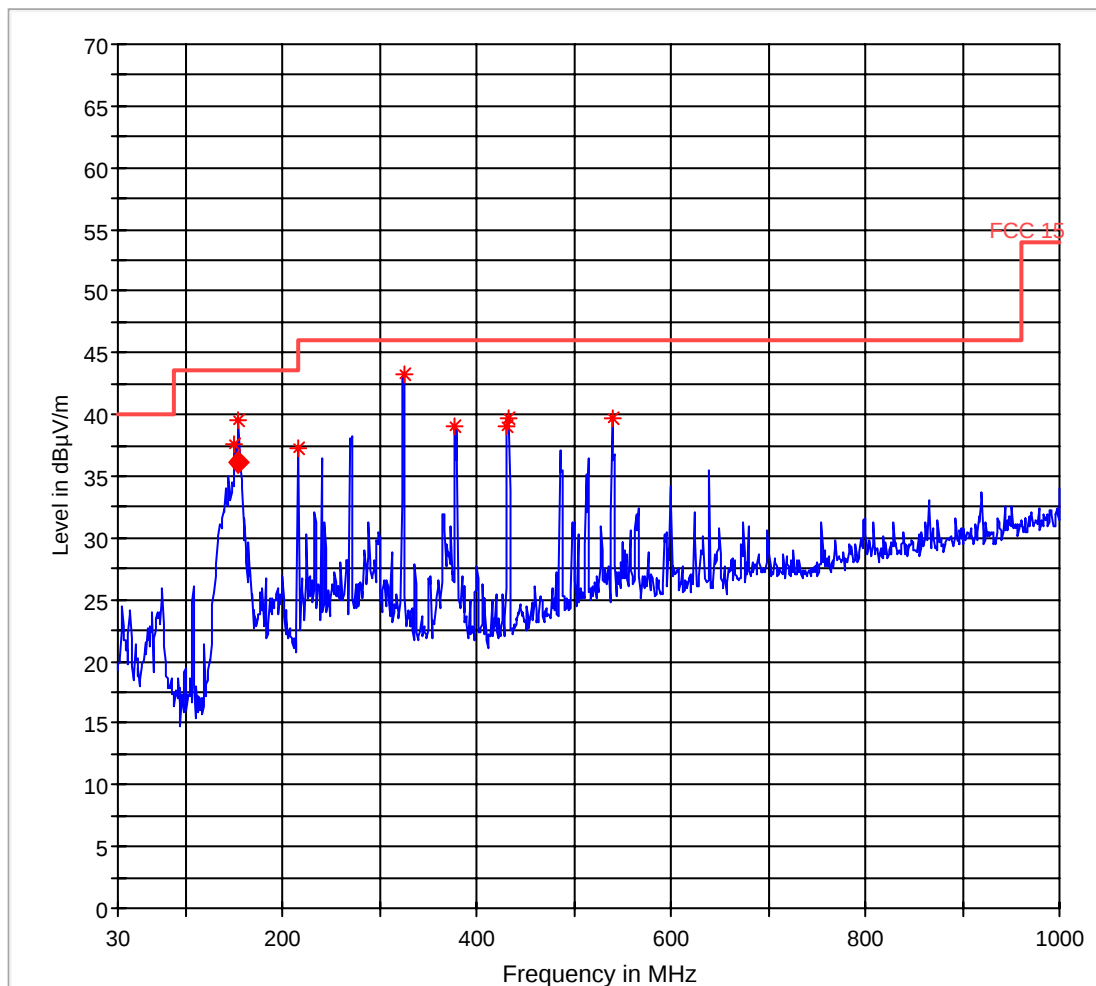
### EUT Information

Description:

EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (GSM/UMTS Sample)  
Configuration: Inductive Cover with Inductive Dock with AC Adapter #24 with Laptop

Comment:

FCC 15 30-1000MHz



— FCC 15.LimitLine  
\* Data Reduction 1 [1]

— Preview Result 1  
◆ Final Measurement Result 1

## EMI Auto Test(1)

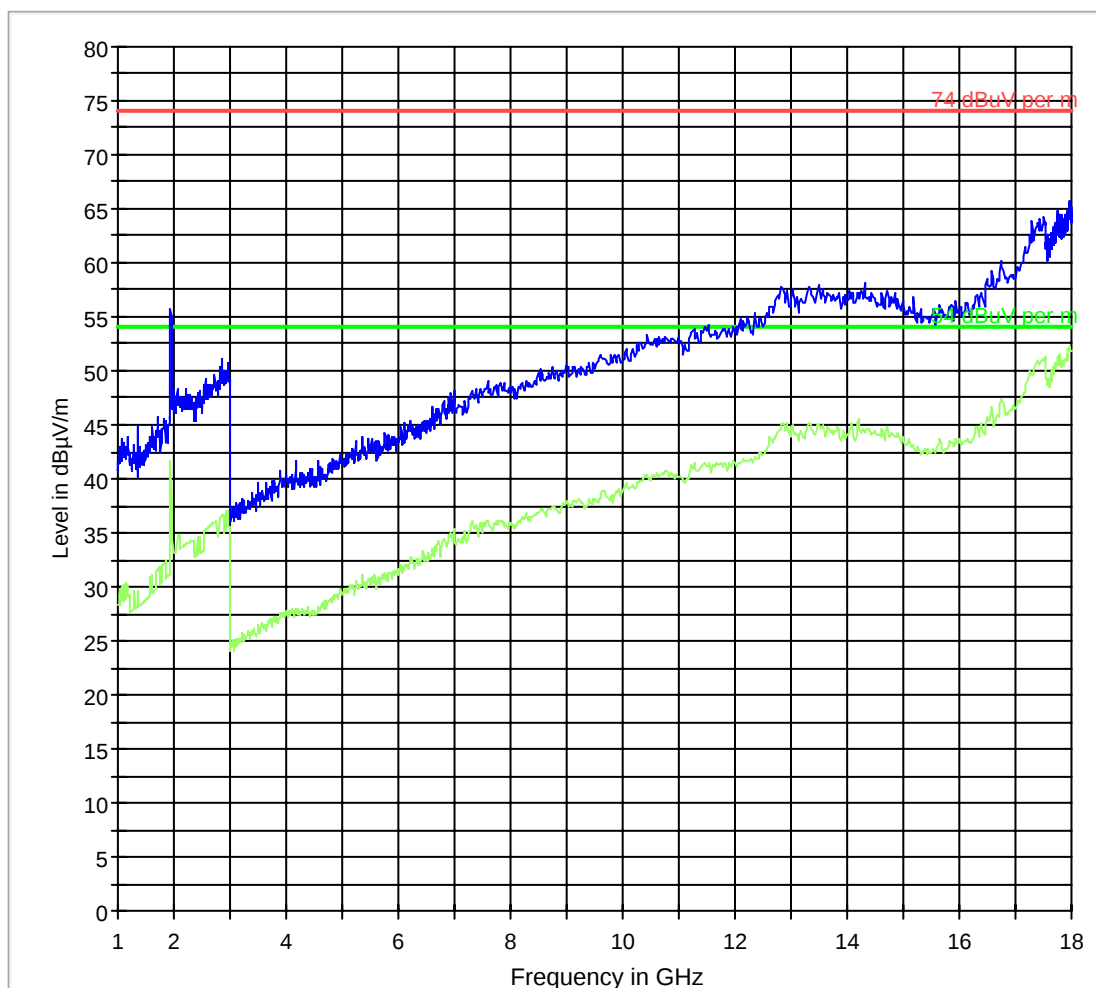
### EUT Information

Description:

EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: (GSM/UMTS Sample)  
Configuration: Inductive Cover with Inductive Dock with AC Adapter #24 with Laptop

Comment:

FCC 15 1-18GHz



— 74 dBuV per m.LimitLine  
— 54 dBuV per m.LimitLine  
— Preview Result 1  
— Preview Result 2

### 5.13 AC Power Line Conducted Emissions

#### 5.13.1 Limits: §15.107/15.207

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

| Frequency of emission (MHz) | Conducted limit (dB $\mu$ V) |           |
|-----------------------------|------------------------------|-----------|
|                             | Quasi-peak                   | Average   |
| 0.15–0.5                    | 66 to 56*                    | 56 to 46* |
| 0.5–5                       | 56                           | 46        |
| 5–30                        | 60                           | 50        |

\*Decreases with the logarithm of the frequency.

Analyzer Settings: RBW = 10KHz; VBW = 10KHz

#### 5.13.2 Test Conditions:

Modulation: GFSK

#### 5.13.3 Test Result:

No significant emissions measurable. Plots reported here represent the worse case emissions for all modulations.

### 5.13.4 Test data/ plots: Standard Cover with AC Adapter #24

EMI Auto Test(1)

1 / 1

## EMI Auto Test(1)

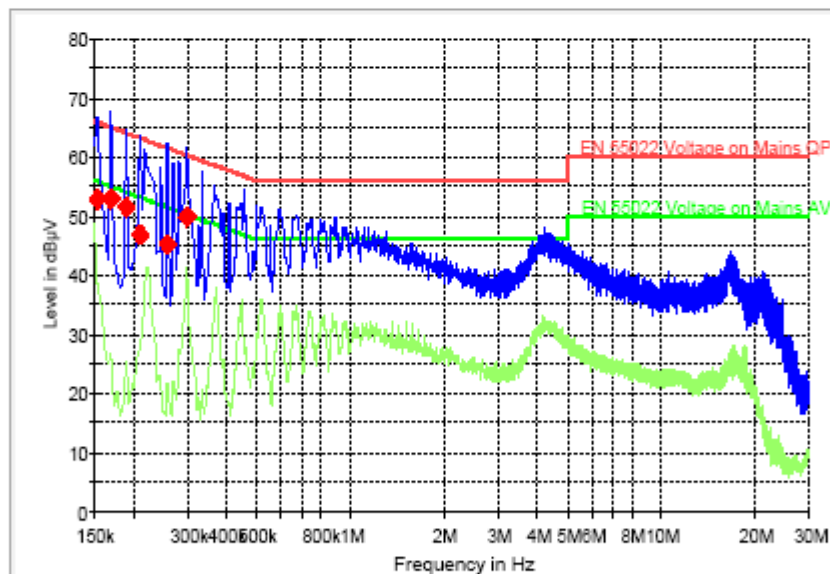
### EUT Information

Description:  
 EUT Name: GSM/UMTS Phone  
 Manufacturer: Palm  
 Serial Number: (FCC 15.247 Sample)  
 Configuration: Standard Cover and AC adapter #24  
 Comment: Wi-Fi and BT Enabled

### Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) | Comment |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|---------|
| 0.154000        | 52.9             | 5000.000        | 9.000           | GND | N    | 1.0        | 12.9        | 65.8         |         |
| 0.170000        | 52.9             | 5000.000        | 9.000           | GND | N    | 1.0        | 12.1        | 65.0         |         |
| 0.190000        | 51.5             | 5000.000        | 9.000           | GND | L1   | 0.9        | 12.5        | 64.0         |         |
| 0.210000        | 46.9             | 5000.000        | 9.000           | GND | N    | 0.9        | 16.3        | 63.2         |         |
| 0.258000        | 45.1             | 5000.000        | 9.000           | GND | N    | 0.8        | 16.4        | 61.5         |         |
| 0.298000        | 50.0             | 5000.000        | 9.000           | GND | L1   | 0.6        | 10.3        | 60.3         |         |

CISPR 22 Mains Conducted



— EN 55022 Voltage on Mains CP Limit Line  
— Preview Result 1  
◆ Final Result 1  
— EN 55022 Voltage on Mains AV Limit Line  
— Preview Result 2

**Standard Cover with AC Adapter #30**

EMI Auto Test(1)

1 / 1

## EMI Auto Test(1)

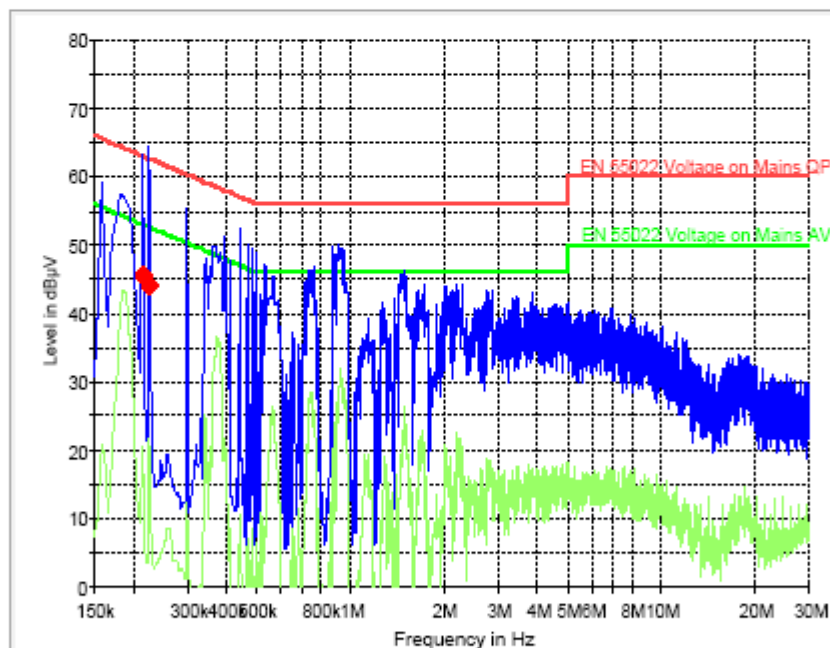
### EUT Information

Description:  
 EUT Name: GSM/UMTS Phone  
 Manufacturer: Palm  
 Serial Number: (FCC 15.247 Sample)  
 Configuration: Standard Cover and AC adapter #30  
 Comment: Wi-Fi and BT Enabled

### Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) | Comment |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|---------|
| 0.214000        | 45.6             | 5000.000        | 9.000           | GND | N    | 0.9        | 17.4        | 63.0         |         |
| 0.226000        | 44.1             | 5000.000        | 9.000           | GND | N    | 0.8        | 18.5        | 62.6         |         |

CISPR 22 Mains Conducted



— EN 55022 Voltage on Mains OP Limit Line  
— Preview Result 1  
◆ Final Result 1  
— EN 55022 Voltage on Mains AV Limit Line  
— Preview Result 2

**Inductive Cover with Inductive Dock and AC Adapter #24**

EMI Auto Test(1)

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## EMI Auto Test(1)

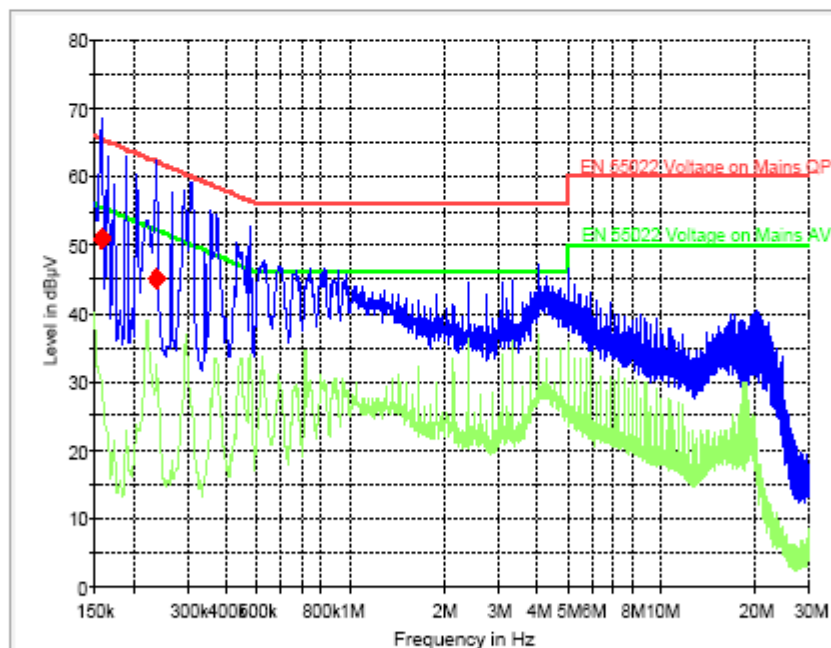
### EUT Information

Description:  
 EUT Name: GSM/UMTS Phone  
 Manufacturer: Palm  
 Serial Number: (FCC 15.247 Sample)  
 Configuration: Inductive Cover with Inductive Dock and AC adapter #24  
 Comment: Wi-Fi and BT Enabled

### Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) | Comment |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|---------|
| 0.158000        | 51.0             | 5000.000        | 9.000           | GND | L1   | 1.0        | 14.6        | 65.6         |         |
| 0.238000        | 45.1             | 5000.000        | 9.000           | GND | N    | 0.8        | 17.1        | 62.2         |         |

CISPR 22 Mains Conducted



— EN 55022 Voltage on Mains DP LimitLine  
— Preview Result 1  
◆ Final Result 1  
— EN 55022 Voltage on Mains AV LimitLine  
— Preview Result 2

**Inductive Cover with Inductive Dock and AC Adapter #30**

EMI Auto Test(1)

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## EMI Auto Test(1)

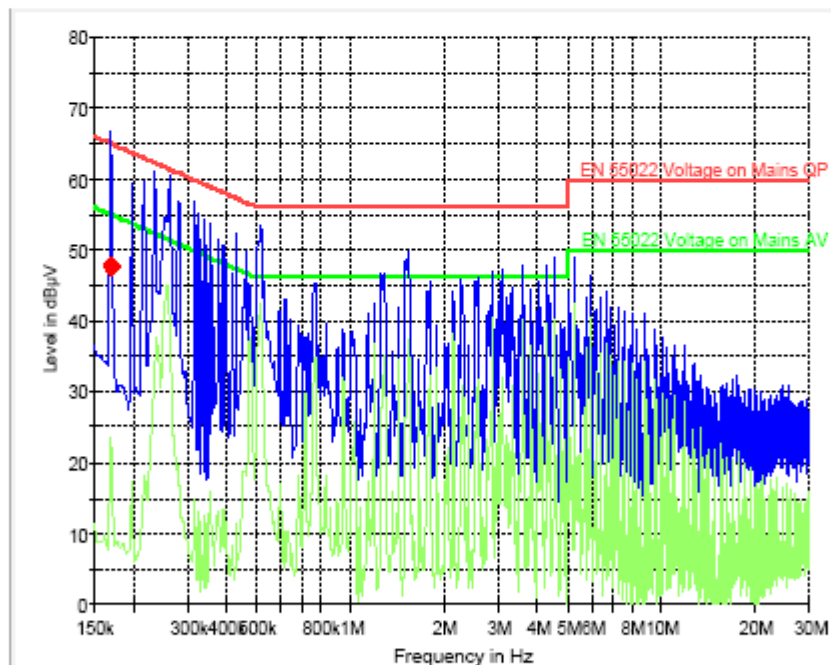
### EUT Information

Description:  
 EUT Name: GSM/UMTS Phone  
 Manufacturer: Palm  
 Serial Number: (FCC 15.247 Sample)  
 Configuration: Inductive Cover with Inductive Dock and AC adapter #30  
 Comment: Wi-Fi and BT Enabled

### Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) | Comment |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|---------|
| 0.170000        | 47.7             | 5000.000        | 9.000           | GND | N    | 1.0        | 17.3        | 65.0         |         |

CISPR 22 Mains Conducted



— EN 55022 Voltage on Mains GP LimitLine  
— Preview Result 1  
◆ Final Result 1  
— EN 55022 Voltage on Mains AV LimitLine  
— Preview Result 2

**Idle Mode – Inductive Cover with AC adapter #30**  
**This represents worst case emissions of all configurations.**

RX\_Inductive Cover; dock; ac 30

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## RX\_Inductive Cover; dock; ac 30

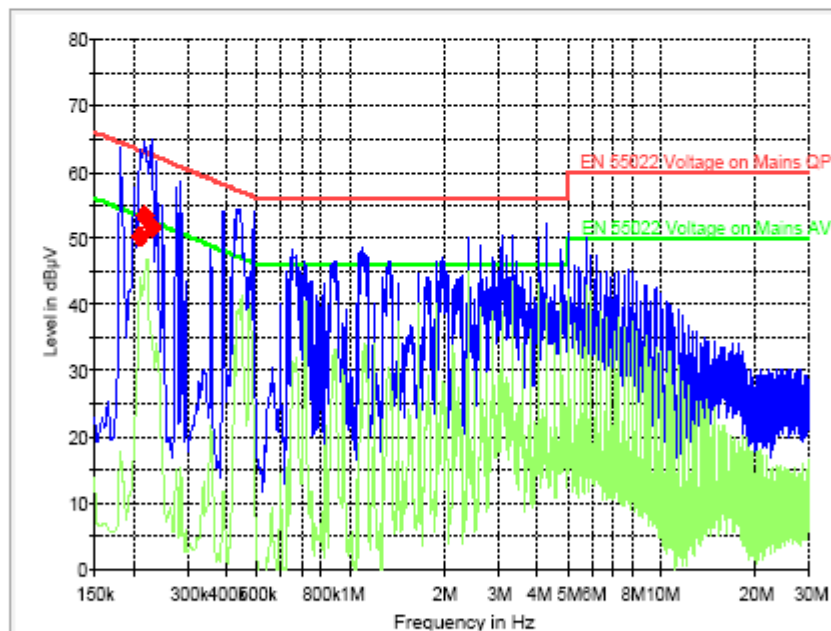
### EUT Information

Description:  
EUT Name: GSM/UMTS Phone  
Manufacturer: Palm  
Serial Number: GSM/UMTS SAMPLE  
Configuration: Inductive Cover w dock and AC adapter #30  
Comment: RX

### Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) | Comment |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|---------|
| 0.210000        | 50.2             | 5000.000        | 9.000           | GND | L1   | 0.9        | 13.0        | 63.2         |         |
| 0.218000        | 53.4             | 5000.000        | 9.000           | GND | L1   | 0.9        | 9.5         | 62.9         |         |
| 0.230000        | 51.7             | 5000.000        | 9.000           | GND | N    | 0.8        | 10.7        | 62.4         |         |

CISPR 22 Mains Conducted

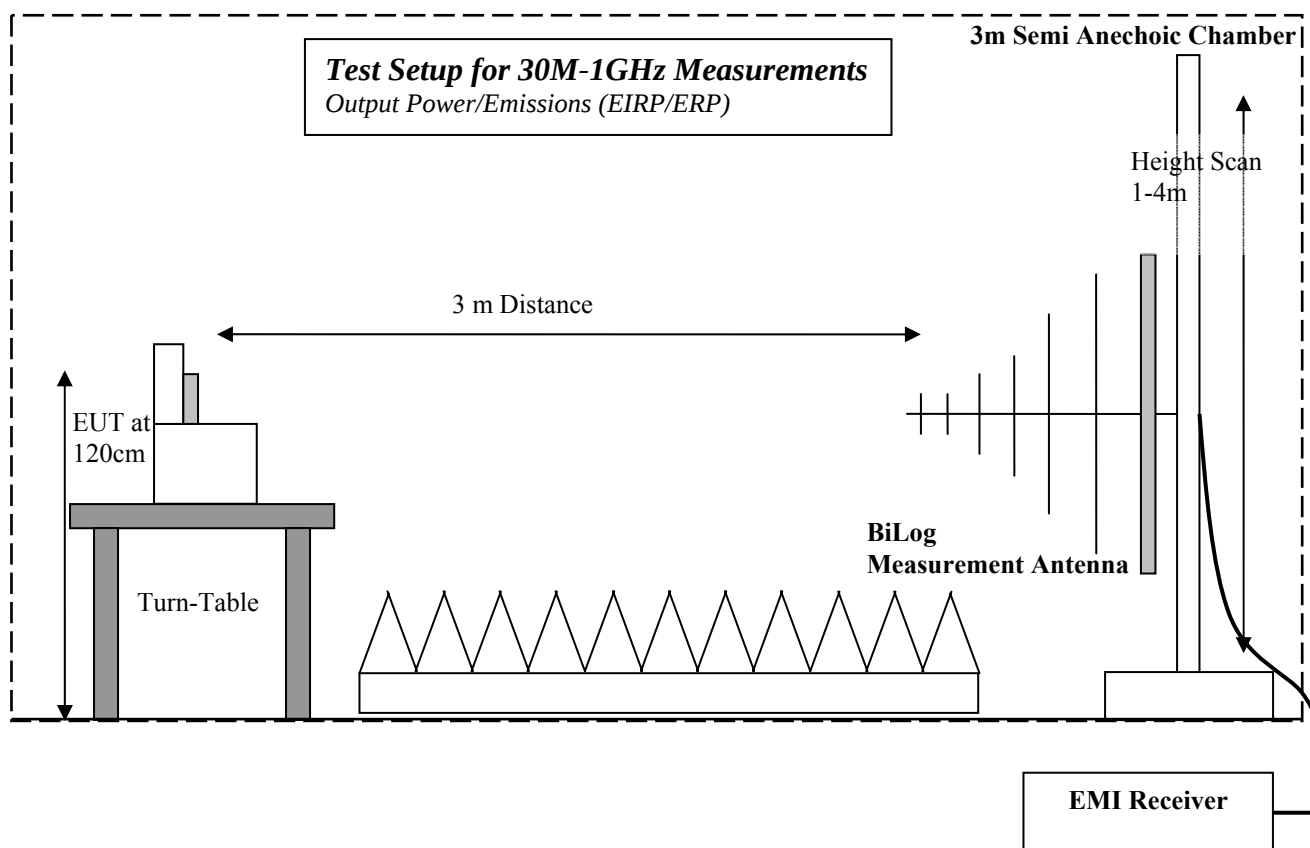
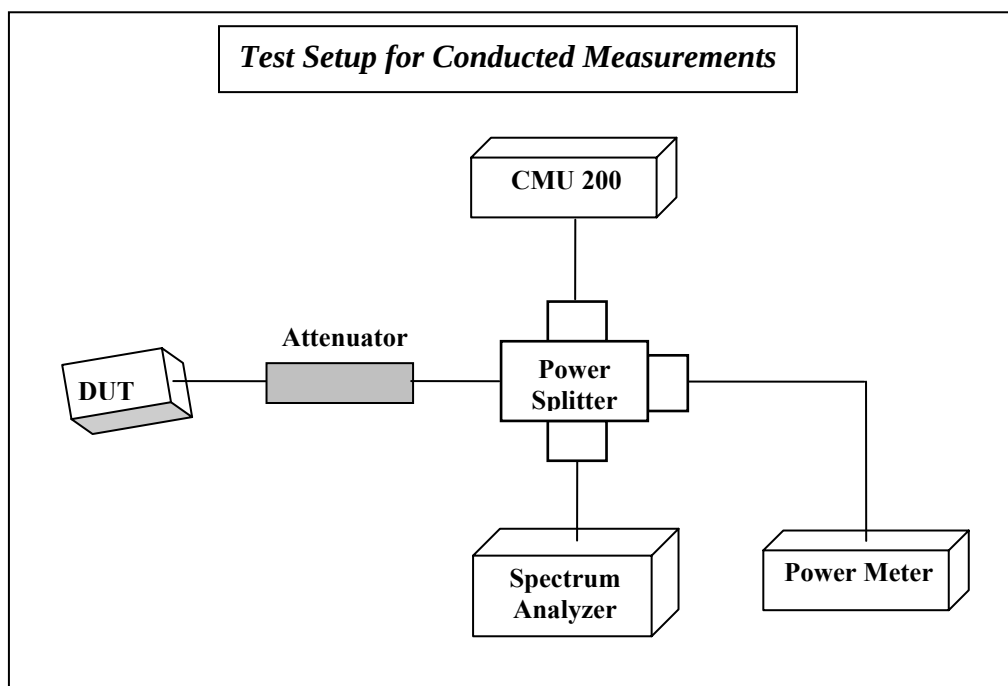


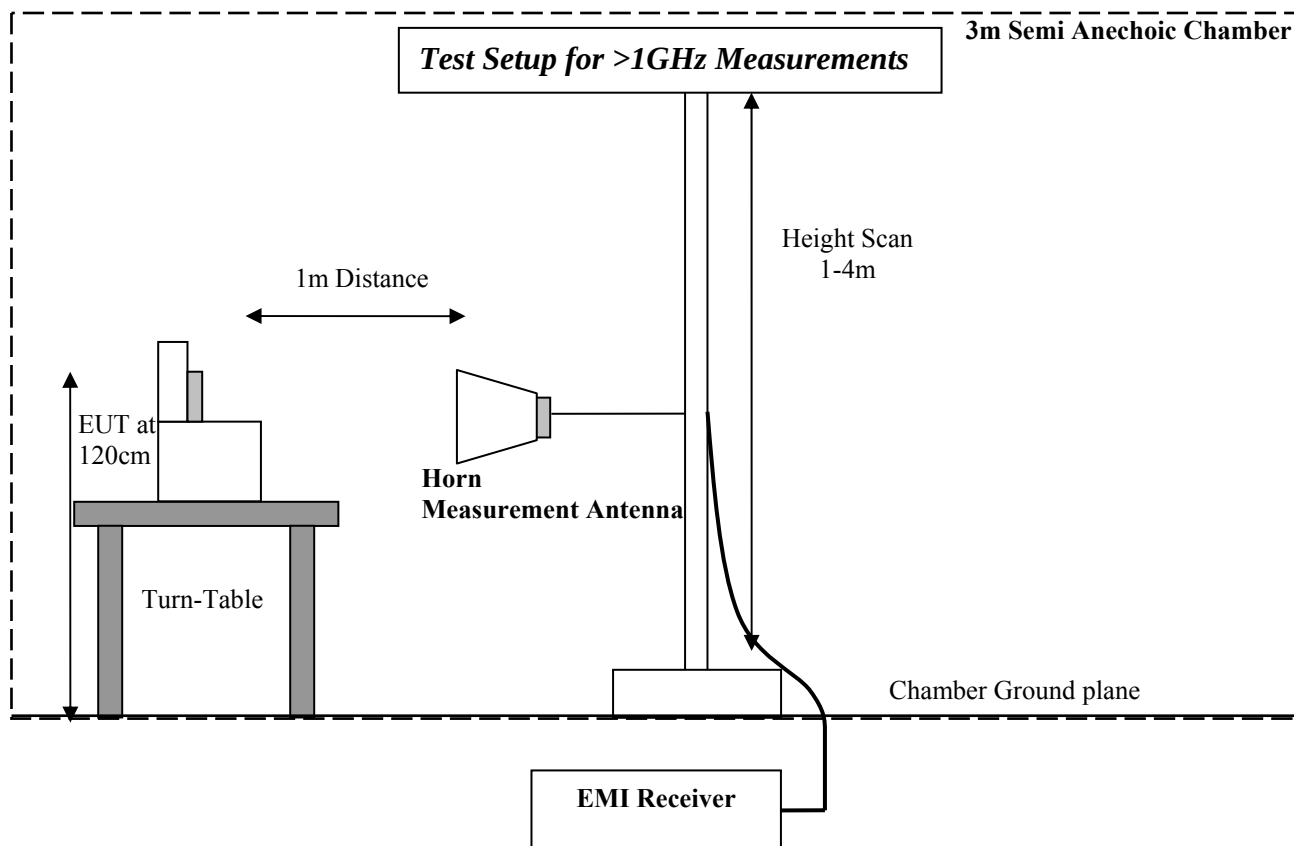
— EN 55022 Voltage on Mains QP LimitLine  
— Preview Result 1  
◆ Final Result 1  
— EN 55022 Voltage on Mains AV LimitLine  
— Preview Result 2

**6 Test Equipment and Ancillaries used for tests**

| <b>No</b> | <b>Instrument/Ancillary</b>  | <b>Type</b>  | <b>Manufacturer</b> | <b>Serial No.</b> | <b>Cal Due</b> | <b>Interval</b> |
|-----------|------------------------------|--------------|---------------------|-------------------|----------------|-----------------|
| <b>01</b> | Spectrum Analyzer            | ESIB 40      | Rohde & Schwarz     | 100107            | May 2010       | 1 year          |
| <b>02</b> | Spectrum Analyzer            | FSEM 30      | Rohde & Schwarz     | 100017            | May 2010       | 1 year          |
| <b>03</b> | Signal Generator             | SMY02        | Rohde & Schwarz     | 836878/011        | May 2010       | 1 year          |
| <b>04</b> | Power-Meter                  | NRVD         | Rohde & Schwarz     | 0857.8008.02      | May 2010       | 1 year          |
| <b>05</b> | Biconilog Antenna            | 3141         | EMCO                | 0005-1186         | June 2010      | 1 year          |
| <b>06</b> | Horn Antenna (1-18GHz)       | SAS-200/571  | AH Systems          | 325               | June 2010      | 1 year          |
| <b>07</b> | Horn Antenna (18-26.5GHz)    | 3160-09      | EMCO                | 1240              | June 2010      | 1 year          |
| <b>08</b> | Power Splitter               | 11667B       | Hewlett Packard     | 645348            | n/a            | n/a             |
| <b>09</b> | Climatic Chamber             | VT4004       | Voltsch             | G1115             | May 2010       | 1 year          |
| <b>10</b> | High Pass Filter             | 5HC2700      | Trilithic Inc.      | 9926013           | n/a            | n/a             |
| <b>11</b> | High Pass Filter             | 4HC1600      | Trilithic Inc.      | 9922307           | n/a            | n/a             |
| <b>12</b> | Pre-Amplifier                | JS4-00102600 | Miteq               | 00616             | May 2010       | 1 year          |
| <b>13</b> | Power Sensor                 | URV5-Z2      | Rohde & Schwarz     | DE30807           | May 2010       | 1 year          |
| <b>14</b> | Digital Radio Comm. Tester   | CMD-55       | Rohde & Schwarz     | 847958/008        | May 2010       | 1 year          |
| <b>15</b> | Universal Radio Comm. Tester | CMU 200      | Rohde & Schwarz     | 832221/06         | May 2010       | 1 year          |
| <b>16</b> | LISN                         | ESH3-Z5      | Rohde & Schwarz     | 836679/003        | May 2010       | 1 year          |
| <b>17</b> | Loop Antenna                 | 6512         | EMCO                | 00049838          | July 2010      | 2 years         |

## 7 BLOCK DIAGRAMS







**8 Revision History**

| Date       | Report Name     | Changes to report | Report prepared by |
|------------|-----------------|-------------------|--------------------|
| 2010-01-22 | Original Report |                   | Josie Sabado       |
|            |                 |                   |                    |